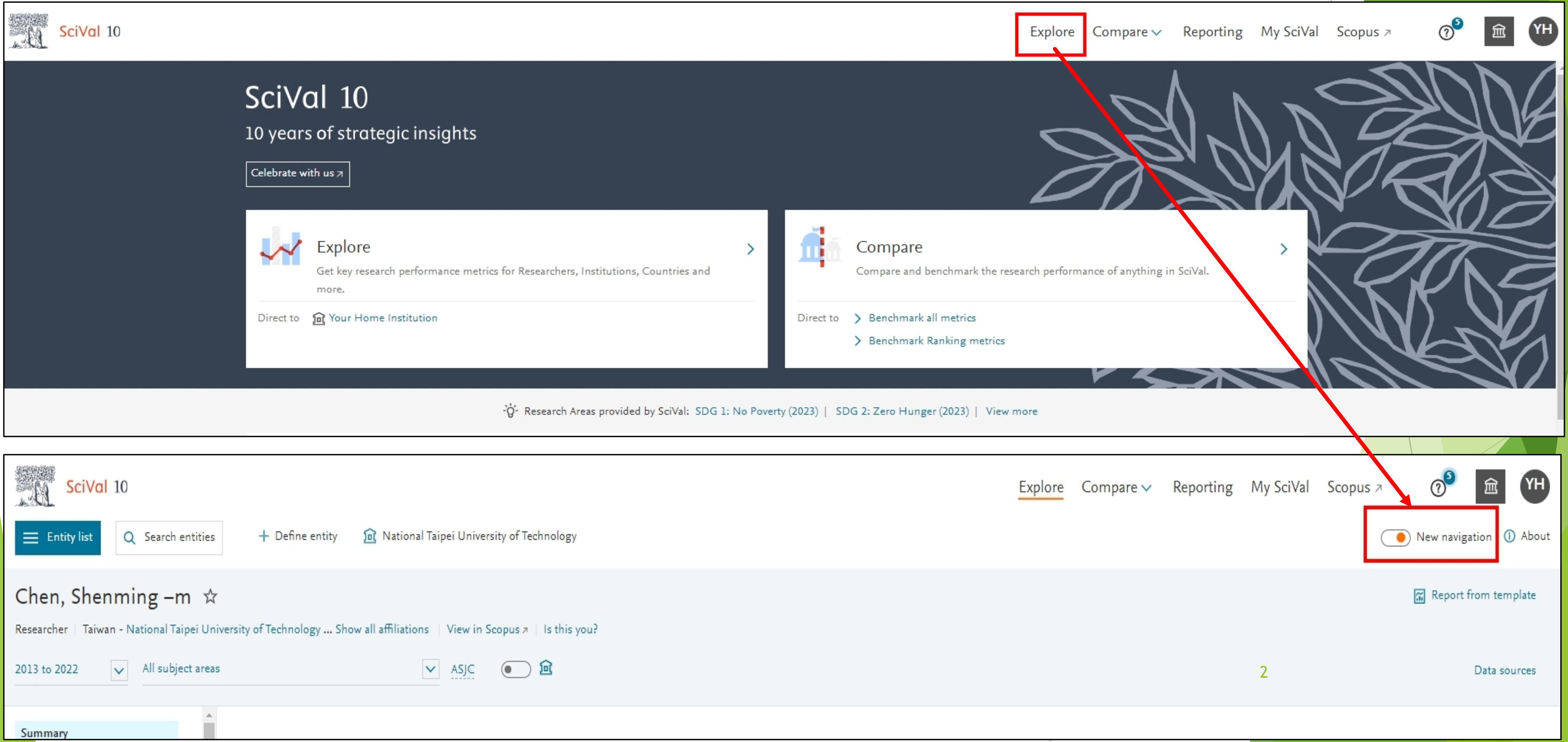
各類獎助點數查詢教學

研發處113.4.30修正

因應Scival 113.4.17版本更新，改回舊版之方式: (後續查詢方式仍以舊版顯示)

Step1:點選右上角【Explore】按鈕後，跳到下圖。

Step2:右上角【New navigation】，將圓點滑到**左邊**即完成設定。



申請人於 SciVal 資料庫中近五年(108-112年)FWCI 值及 h-5指數，若為本校近五年(108-112年)FWCI 值及 h-5指數之倍數，擇最優一項加計點數，對應表如下：	總計點數 (A)+(B)

FWCI之倍數	1.1-1.3(不含)	1.3-1.5(不含)	1.5-1.8(不含)	1.8-2.2(不含)	2.2以上
h-5指數之倍數	0.10-0.15(不含)	0.15-0.25(不含)	0.25-0.40(不含)	0.40-0.55(不含)	0.55以上
加計點數	6	8	10	13	15

申請人近5年 FWCI 值：　為本校近五年 FWCI 值 1.03 之　倍。

申請人 h-5指數：　為本校 h-5指數 68 之　倍。

上述兩者擇最優一項，加計點數：　點(B)。

此值以本處查詢結果為準

說明：1. 近五年(108-112 年)以本校名義發表之學術論著（此段期間曾生產或請育嬰假者得以延長，其延長期限依實際請假時間為依據，並檢附相關證明文件）始得採計。

2. 論文之期刊排名以出版年度為準，若無該出版年資料，則以前一年度為準。

3. 每篇論文僅能單一作者提出申請，若有2位或以上本校教師為共同作者，請檢附其他教師同意書。

需將圓點滑到右邊

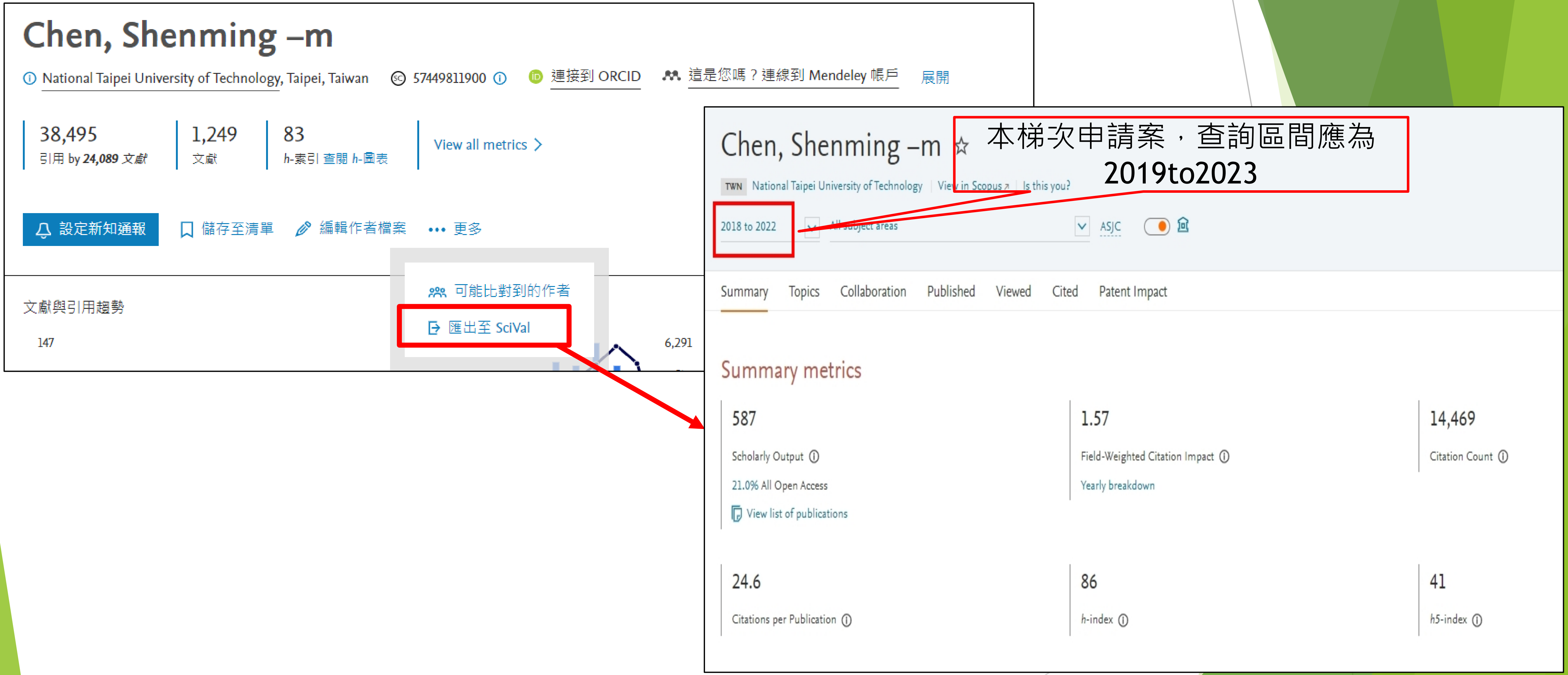
需查詢近五年之資料(EX:113年度申請，此區間應為2019 to 2023)

以陳生明教授為例：
申請人近五年FWCI值：1.61為本校近五年FWCI值 1.03 之 1.56 倍 (10點)
申請人h-5指數：41 為本校h-5指數 68 之 0.60 倍 (15點)
上述兩者擇最優一項，加計點數： **15點**

***操作方式詳後**

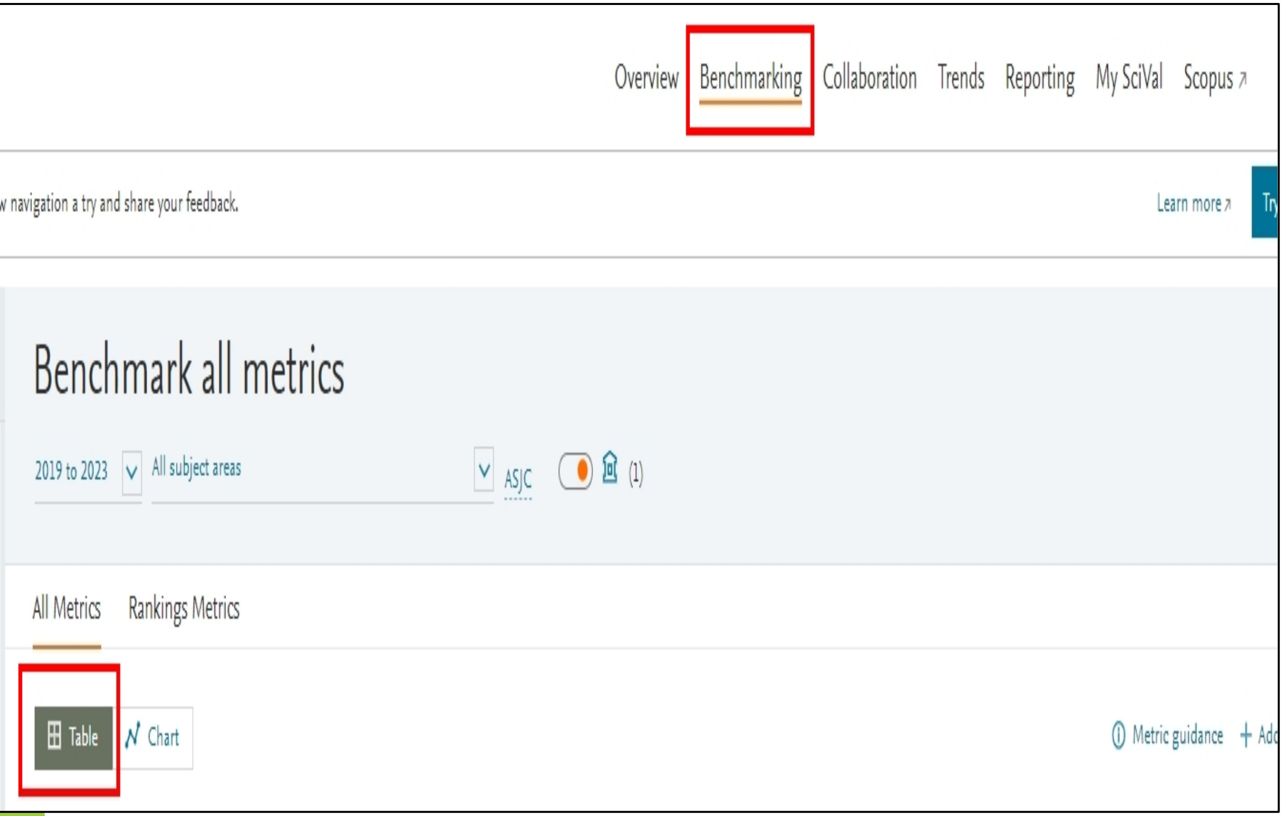
查詢方式:

登入Scopus資料庫，輸入老師名字後，點選【匯出至SciVal】，即跑出資料頁面

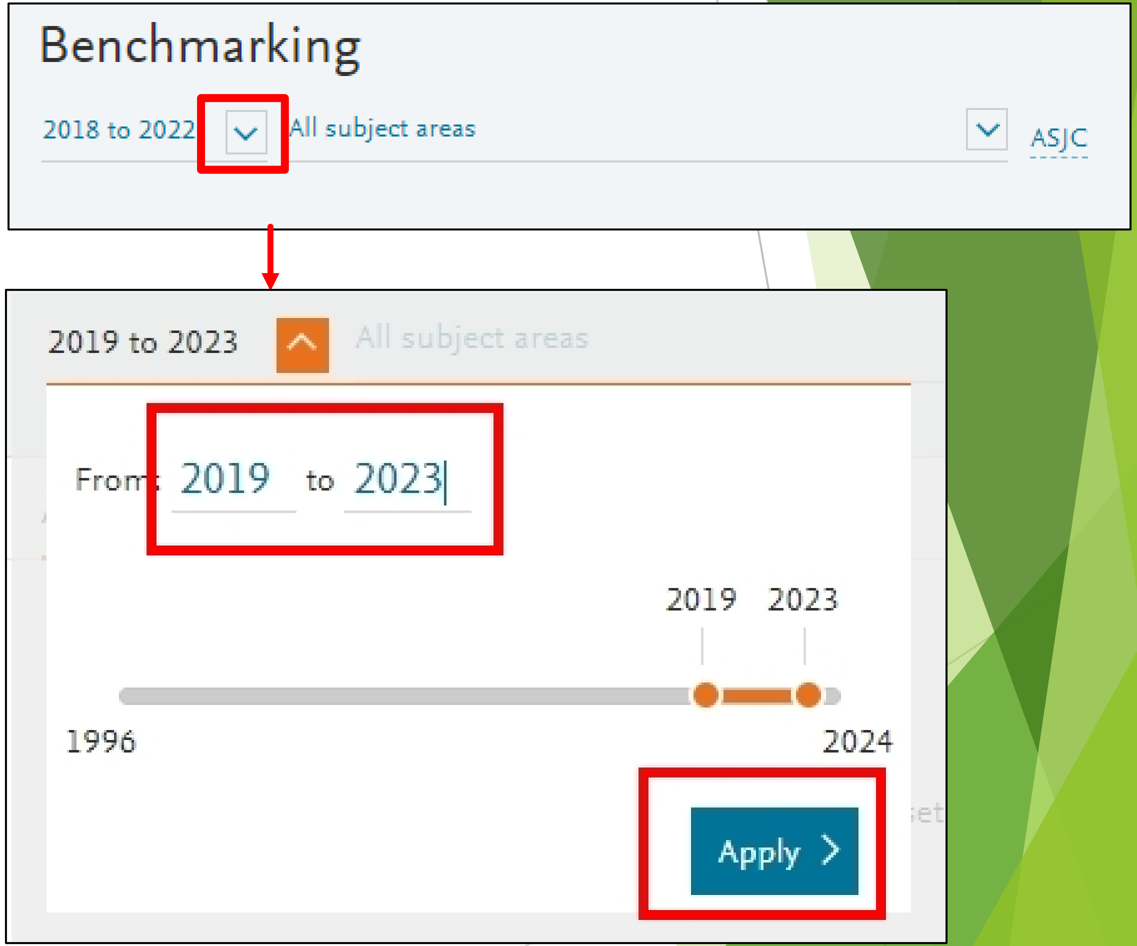


更改查詢區間方式:

Step1:點選右上角【Benchmarking】頁籤後，點選【Table】

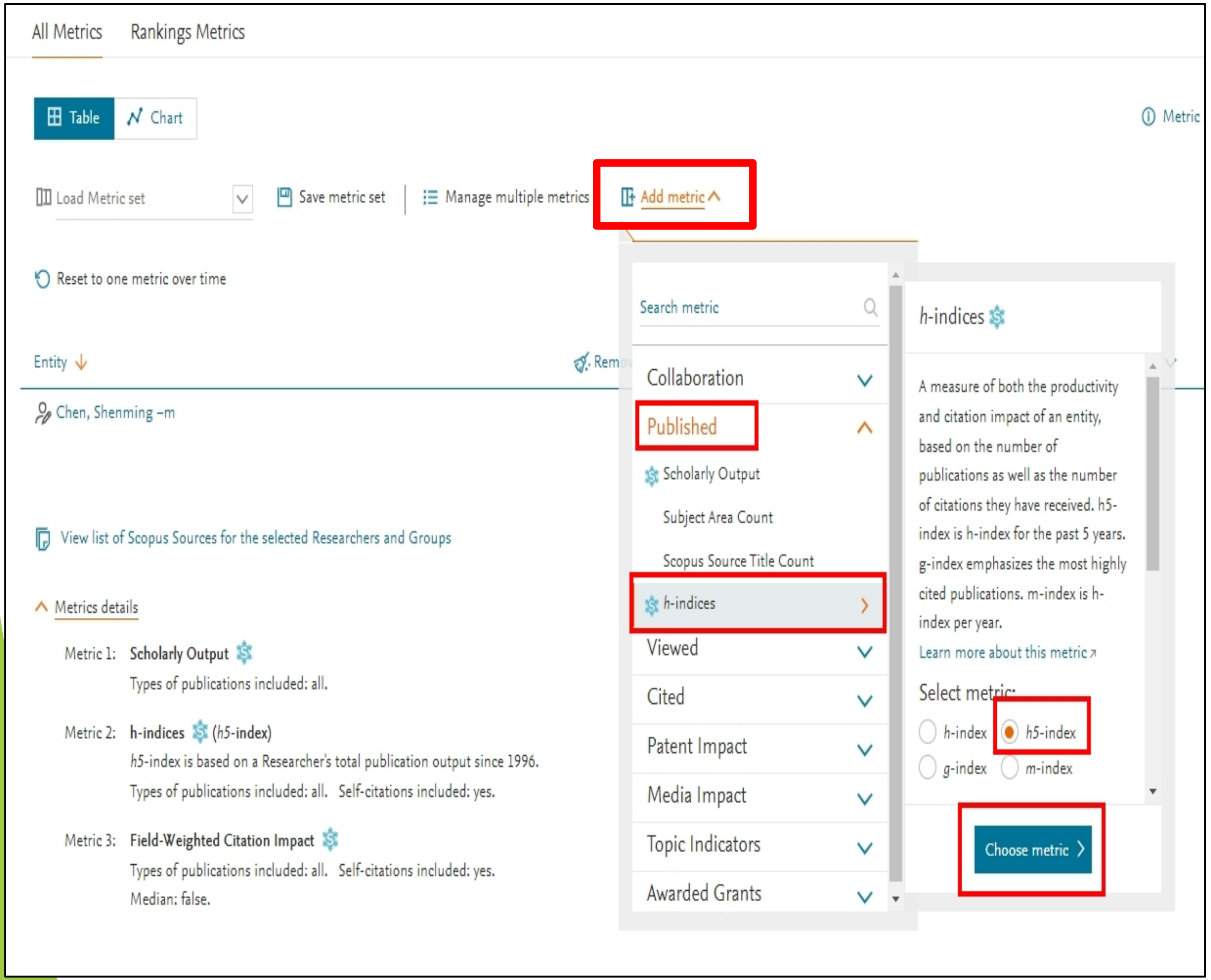


Step2:點選箭頭後，即跳出視窗，輸入近五年之年度後，點選【Apply】

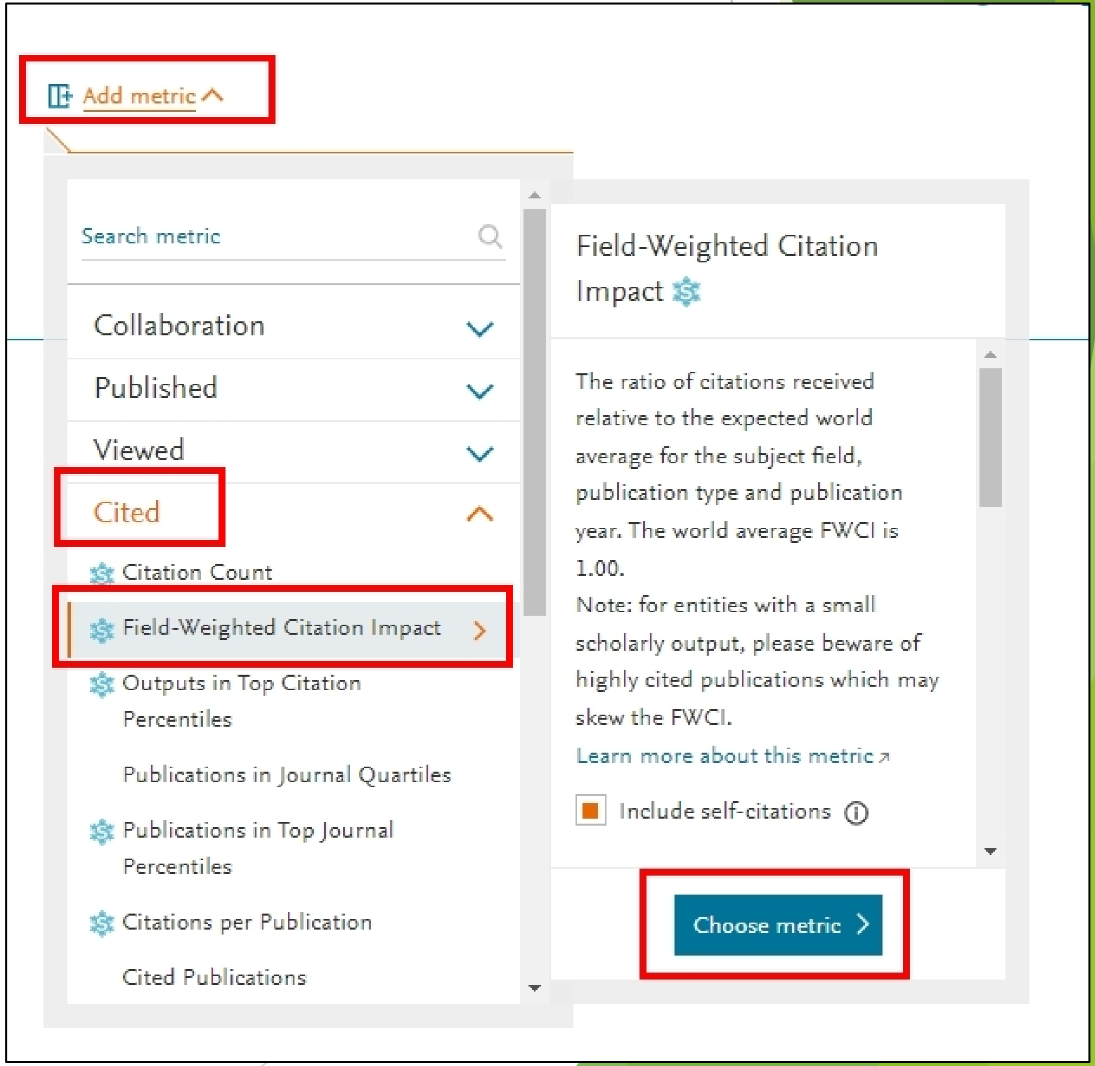


更改查詢區間方式:

Step3:點選中間【Add metric】頁籤後，下拉選單點選【Published】後，即出現【h-indices】，選擇【h5-index】後，點選【Choose metric】。

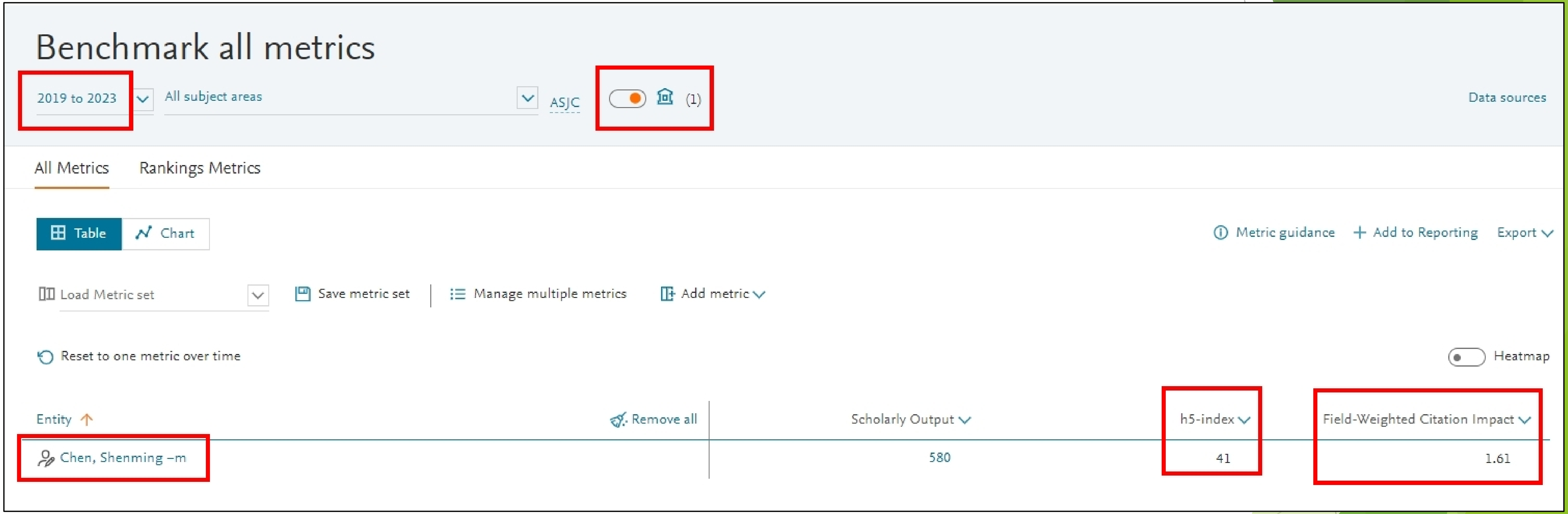


Step4:同前一步驟，下拉選單點選【Cited】後，即出現【Field-Weighted Citation Impact】，點選【Choose metric】。



更改查詢區間方式:

Step5:列印下列畫面做為佐證，請注意，查詢區間須為【2019-2023】。



點數填表方式

以莊賀喬教授之論文為例:
(接續下頁)

每篇論文僅能有一位作者提出申請，若有2位以上本校教師為**共同作者**，請檢附其他教師同意書

國立臺北科技大學傑出論文績效說明表

B

申請人姓名(中/英文)： 系所/職稱： 員工編號：

	Journal Papers 請依序填寫：姓名、著作名稱、期刊名稱、卷數、頁數、發表年份(SCI/SSCI,Impact Factor;Scopus CiteScore Rank,領域別) 並以＊註記該篇所有之通訊作者，檢附每篇論文首頁與以 Scopus 資料庫為主之證明文件。	期刊排名 R (W1)	作者排序 (W2)	共同作者數 (W3)	額外加權 (W4)	國際合著學術機構國家數 (W5)	點 數 (=W1×W2×W3×W4×W5)
範例	AAA, BBB*, CCC, An entry-exit path planner for an autonomous tractor in a paddy field, Computers and Electronics in Agriculture, Vol.191, Dec, 2021. (SCI, IF=6.757; CiteScore Rank: 1/94=0.0106=1.06%, Horticulture)	☐Nature、Science 及 Cell (150點) ☐ R≦1% (40點) ■1%<R≦5% (25點) ☐ 5%< R≦10% (15點) ☐ 10%< R≦25% (10點) ☐ 25< R≦40% (5點) ☐ R >40% (2點)	☐第一作者(x1) ■通訊作者(x1) ☐第二作者(x0.8) ☐第三作者(x0.6) ☐第四作者(x0.4) ☐第五作者以上 (x0.2)	☐無(x1) ■1位通訊作者 (x1) ☐2位(含)以上通訊作者(x0.8) ☐有多位作者 Equal Contribution (x0.8)	■無 (x1) ☐企業 (x1.1) ☐SDG (x1.1) ☐SSCI (x1.5) ☐企業、SDG (x1.2) ☐企業、SSCI (x1.6) ☐SDG、SSCI (x1.6) ☐企業、SDG、SSCI (x1.8)	■無 (x1) ☐1-2個國家 (x1.1) ☐3個國家以上 (x1.2)	25×1×1×1×1 =25
		☐Nature、Science 及 Cell (150點) ☐ R≦1% (40點) ☐1%<R≦5% (25點) ☐ 5%< R≦10% (15點) ☐ 10%< R≦25% (10點) ☐ 25< R≦40% (5點) ☐ R >40% (2點)	☐第一作者(x1) ☐通訊作者(x1) ☐第二作者(x0.8) ☐第三作者(x0.6) ☐第四作者(x0.4) ☐第五作者以上 (x0.2)	☐無(x1) ☐1位通訊作者 (x1) ☐2位(含)以上通訊作者(x0.8) ☐有多位作者 Equal Contribution (x0.8)	☐無(x1) ☐企業 (x1.1) ☐SDG (x1.1) ☐SSCI (x1.5) ☐企業、SDG (x1.2) ☐企業、SSCI (x1.6) ☐SDG、SSCI (x1.6) ☐企業、SDG、SSCI (x1.8)	☐無 (x1) ☐1-2個國家 (x1.1) ☐3個國家以上 (x1.2)	

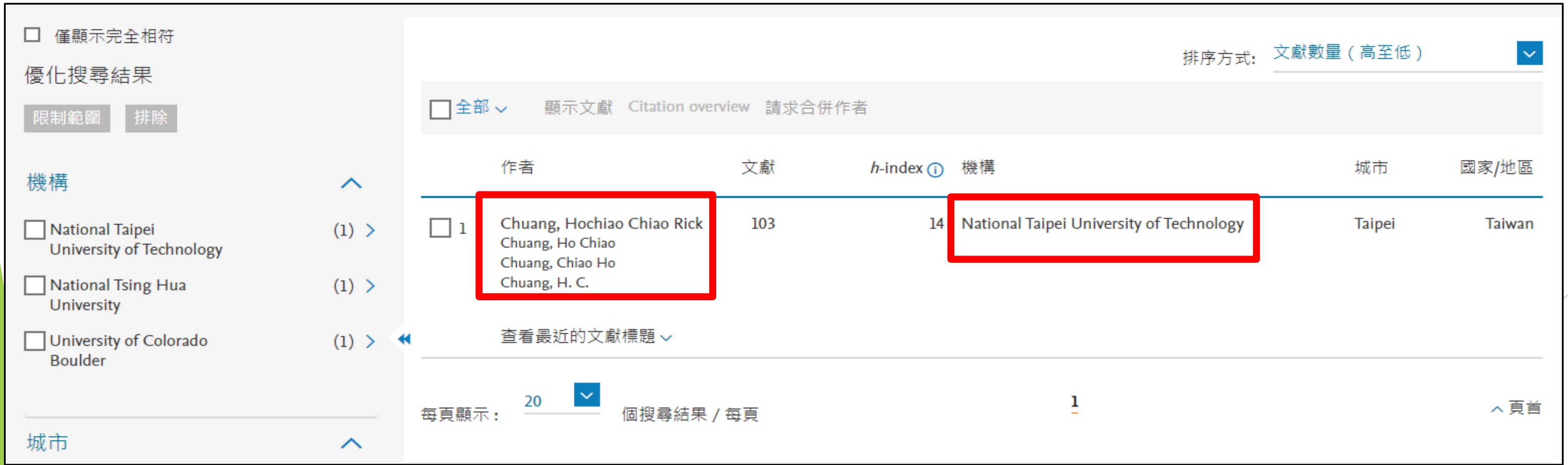
Shobana Sebastin Mary Manickaraj, Sabarison Pandiyarajan, Ai-Ho Liao, Atchaya Ramachandran, Sheng-Tung Huang, Priyadharshini Natarajan, **Ho-Chiao Chuang***, "Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: electrochemical detection towards carcinogenic organic pollutant and energy storage application" Electrochimica Acta, Vol.424, pp 140672, August 2022.(SCI,Impact Factor=7.3; CiteScore Rank:19/280=6.78%, General Chemical Engineering)

15 * 1 * 1*1.1*1.1=18.15

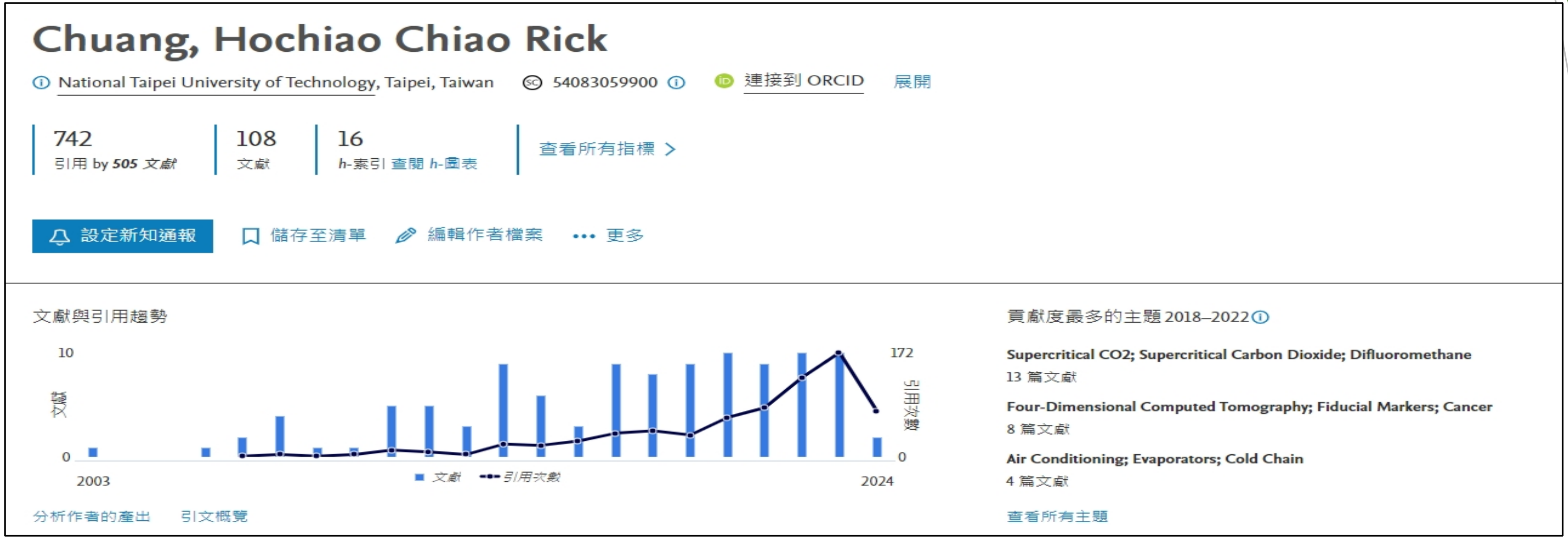
續下頁

查詢方式: (以莊賀喬教授之論文為例)
Step1:登入Scopus資料庫
(https://www.scopus.com/search/form.uri?display=authorLookup#basic)，輸入老師名字後，點選【搜尋】

Step2:確認所屬機構為本校後，點選【老師名字】



續下頁



Chuang, Hochiao Chiao Rick
National Taipei University of Technology, Taipei, Taiwan
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連接到 ORCID
展開
742
引用 by 505 文獻
108
文獻
16
h-索引 查閱 h-圖表
查看所有指標 >
設定新知通報
儲存至清單
編輯作者檔案
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文獻與引用趨勢
10
0
172
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2003
2024
文獻
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分析作者的產出
引文概覽
貢獻度最多的主題 2018–2022
Supercritical CO2; Supercritical Carbon Dioxide; Difluoromethane
13 篇文獻
Four-Dimensional Computed Tomography; Fiducial Markers; Cancer
8 篇文獻
Air Conditioning; Evaporators; Cold Chain
4 篇文獻
查看所有主題

Article
3D-flower-like porous neodymium molybdate nanostructure for trace level detection of organophosphorus pesticide in food samples
Ganesan, M., Keerthika Devi, R., Liao, A.-H., ...Gopalakrishnan, G., Chuang, H.-C.
Food Chemistry, 2022, 396, 133722
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Full Text
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8
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10 結果
20 結果
50 結果
100 結果
200 結果
opus
語言
客戶服務

續下頁

Step4:利用CTRL+F去快速搜尋本篇論文

Chuang, Hochiao Chiao Rick

Sansevieria trifasciata bioma 1/1

Article

Combining the wavelet transform with a phase-lead compensator to a respiratory motion compensation system with an ultrasound tracking technique in radiation therapy

Kuo, C.-C., Guo, M.-L., Liao, A.-H., ...Ting, L.-L., Chuang, H.-C.

Biomedical Signal Processing and Control, 2022, 78, 103892

查看摘要 NTUT Full-Text Full Text 相關文獻

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引用次數

Article

Malic acid pathway of constructing high-performance Ni anticorrosive coatings using supercritical-CO_2 electrodeposition

Manickaraj, S.S.M., Pandiyarajan, S., Liao, A.-H., ...Lee, K.-Y., Chuang, H.-C.

Materials Science in Semiconductor Processing, 2022, 148, 106780

查看摘要 NTUT Full-Text Full Text 相關文獻

5
引用次數

Article

Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

Manickaraj, S.S.M., Pandiyarajan, S., Liao, A.-H., ...Natarajan, P., Chuang, H.-C.

Electrochimica Acta, 2022, 424, 140672

查看摘要 NTUT Full-Text Full Text 相關文獻

6
引用次數

續下頁

Step5:點選反橘色之論文題目，即帶入論文資料畫面，要確認論文發布時間在本次申請之規定時間內

Electrochimica Acta • 卷 424 20 August 2022 • 論文號碼 140672

文獻類型
論文
來源出版物種類
期刊

ISSN：
00134686
DOI
10.1016/j.electacta.2022.140672

展開

Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

Manickaraj, Shobana Sebastin Mary[a, b]; Pandiyarajan, Sabarison[a, b]; Liao, Ai-Ho[c, d]; Ramachandran, Atchaya[e]; Huang, Sheng-Tung[a]; Natarajan, Priyadharshini[f]; Chuang, Ho-Chiao[b]

將全部儲存到作者清單

[a] Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei, 106344, Taiwan
[b] Department of Mechanical Engineering, National Taipei University of Technology, Taipei, 106344, Taiwan
[c] Graduate Institute of Biomedical Engineering, National Taiwan University of Science and Technology, Taipei, 106335, Taiwan
[d] Department of Biomedical Engineering, National Defense Medical Center, Taipei, 114201, Taiwan
顯示其他的機構

查閱 PDF　全文選項　匯出

摘要
作者關鍵字
Reaxys 化學資料庫資訊

摘要

Activated carbon (AC) has been widely used for electrochemical applications, such as electrochemical sensors, energy storage applications, etc., due to its fine porous structure, volumetric capacitance, and chemical stability. Supercritical-CO_2 (SC-CO_2) has a fascinating advantage in material science due to its microbubble cavitation, high diffusivity, and high

續下頁

查詢**W1~W5**之方式

國立臺北科技大學傑出論文績效說明表

B

申請人姓名(中/英文)：　　　　系所/職稱：　　　　員工編號：

Journal Papers 請依序填寫：姓名、著作名稱、期刊名稱、卷數、頁數、發表年份(SCI/SSCI,Impact Factor;Scopus CiteScore Rank,領域別) 並以＊註記該篇所有之通訊作者，檢附每篇論文首頁與以 Scopus 資料庫為主之證明文件。		期刊排名 R (W1)	作者排序 (W2)	共同作者數 (W3)	額外加權 (W4)	國際合著學術機構國家數 (W5)	點　數 (=W1×W2 ×W3×W4×W5)
1		☐Nature、Science 及 Cell (150點) ☐ R≦1% (40點) ☐1%<R≦5% (25點) ☐ 5%< R≦10% (15點) ☐ 10%< R≦25% (10點) ☐ 25< R≦40% (5點) ☐ R >40% (2點)	☐第一作者(x1) ☐通訊作者(x1) ☐第二作者(x0.8) ☐第三作者(x0.6) ☐第四作者(x0.4) ☐第五作者以上 (x0.2)	☐無(x1) ☐1位通訊作者 (x1) ☐2位(含)以上通訊作者(x0.8) ☐有多位作者 Equal Contribution (x0.8)	☐無(x1) ☐企業 (x1.1) ☐SDG (x1.1) ☐SSCI (x1.5) ☐企業、SDG (x1.2) ☐企業、SSCI (x1.6) ☐SDG、SSCI (x1.6) ☐企業、SDG、SSCI (x1.8)	☐無 (x1) ☐1-2個國家 (x1.1) ☐3個國家以上 (x1.2)	

續下頁

查詢W1方式-以Scopus查詢

Step1:點選期刊名稱後，視窗右邊即顯示出來源出版物詳情預覽欄位，點選【 瀏覽完整的來源出版物詳情】

Electrochimica Acta · 卷 424 · 20 August 2022 · 論文號碼 140672

Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

Manickaraj, Shobana Sebastin Mary[a, b]; Pandiyarajan, Sabarison[a, b]; Liao, Ai-Ho[c, d]; Ramachandran, Atchaya[e]; Huang, Sheng-Tung[a]; Natarajan, Priyadharshini[f]; Chuang, Ho-Chiao[b]
將全部儲存到作者清單

[a] Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei, 106344, Taiwan
[b] Department of Mechanical Engineering, National Taipei University of Technology, Taipei, 106344, Taiwan
[c] Graduate Institute of Biomedical Engineering, National Taiwan University of Science and Technology, Taipei, 106335, Taiwan
[d] Department of Biomedical Engineering, National Defense Medical Center, Taipei, 114201, Taiwan
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來源出版物詳情預覽 ×

Electrochimica Acta

出版: Elsevier
來源出版物種類: 期刊

瀏覽完整的來源出版物詳情

計量

12.8	1.264	1.047
CiteScore 2022	SJR 2022	SNIP 2022

CiteScore 排名

ASJC 類別	四分位數	百分位數	排名
General Chemical Engineering	Q1	93rd	19 / 272
Electrochemistry	Q1	87th	7 / 54

續下頁

查詢**W1**方式-以Scopus查詢

Step2:選擇論文發表時的年份(如2022年發表，則應選擇2022年之CiteScore)

續下頁

查詢W1方式-以Scopus查詢

Step3:取百分位數最高之排名後，將期刊排名轉換成對應點數，19/272=6.9%，對應法規點數為15，並請**檢附查詢畫面當作佐證資料**

CiteScore 2022

12.8 = 2019 - 2022 90,702 個引用次數 / 2019 - 2022 7,091 篇文獻

計算 05 May, 2023

CiteScore 追蹤2023

10.3 = 迄今 62,619 個引用次數 / 迄今 6,087 篇文獻

最後一次更新:05 September, 2023 • 每個月更新

CiteScore 排行 2022

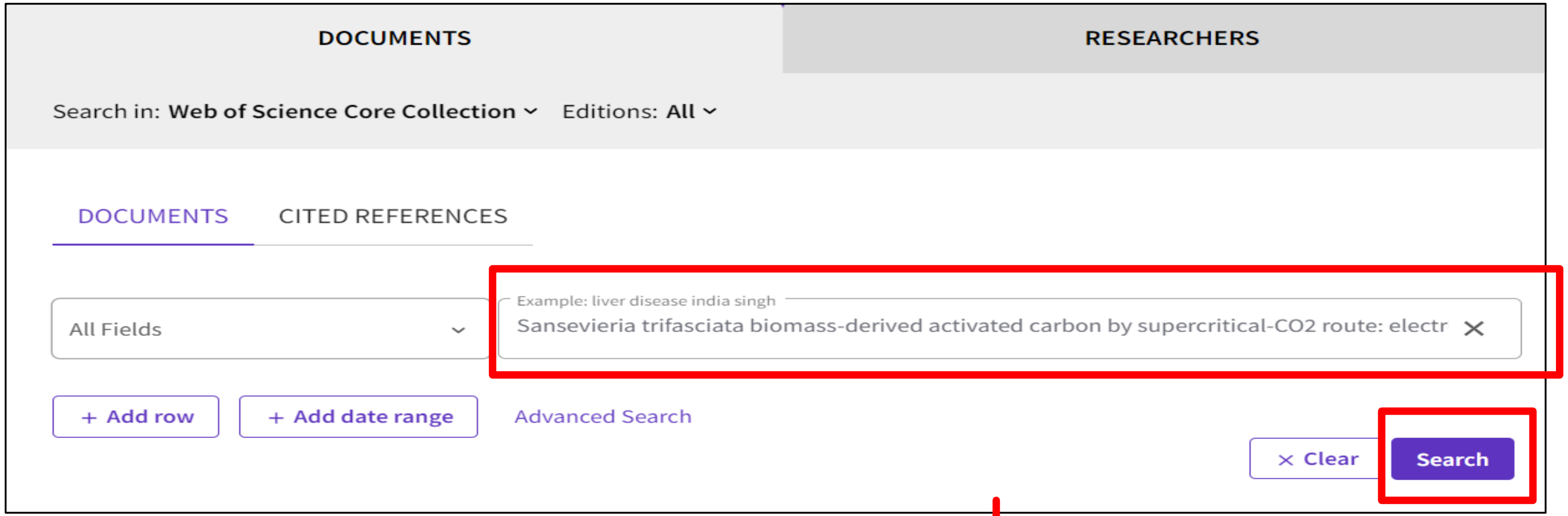
類別	排名	百分位數
Chemical Engineering └ General Chemical Engineering	#19/272	第 93
Chemistry └ Electrochemistry	#7/54	第 87

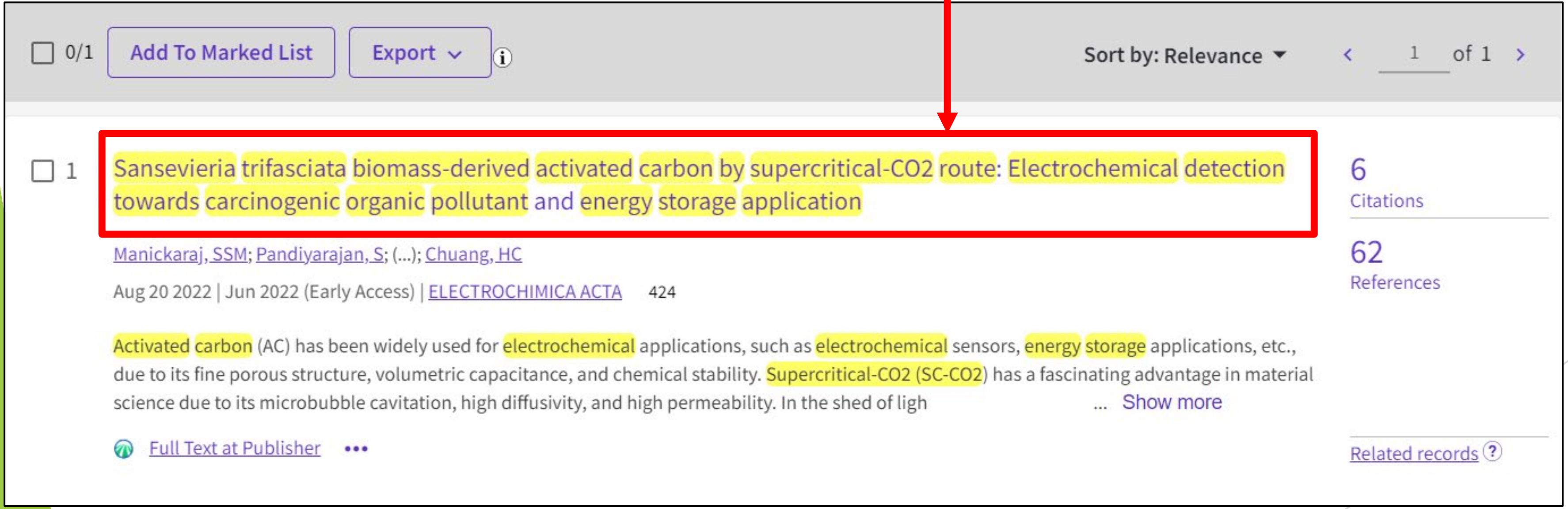
查看 CiteScore 建立方式 〉 CiteScore 常見問題集（FAQ）〉 新增 CiteScore 到您的網站

期刊排名 R (W1)
☐Nature、Science 及 Cell (150點)
☐ R≦1% (40點)
☐1%<R≦5% (25點)
☐ 5%< R≦10% (15點)
☐ 10%< R≦25% (10點)
☐ 25< R≦40% (5點)
☐ R >40% (2點)

續下頁

查詢W1方式-以WOS查詢(https://www.webofscience.com/wos/woscc/basic-search)
Step1:輸入論文題目後，點選【Search】，即帶入論文資料畫面





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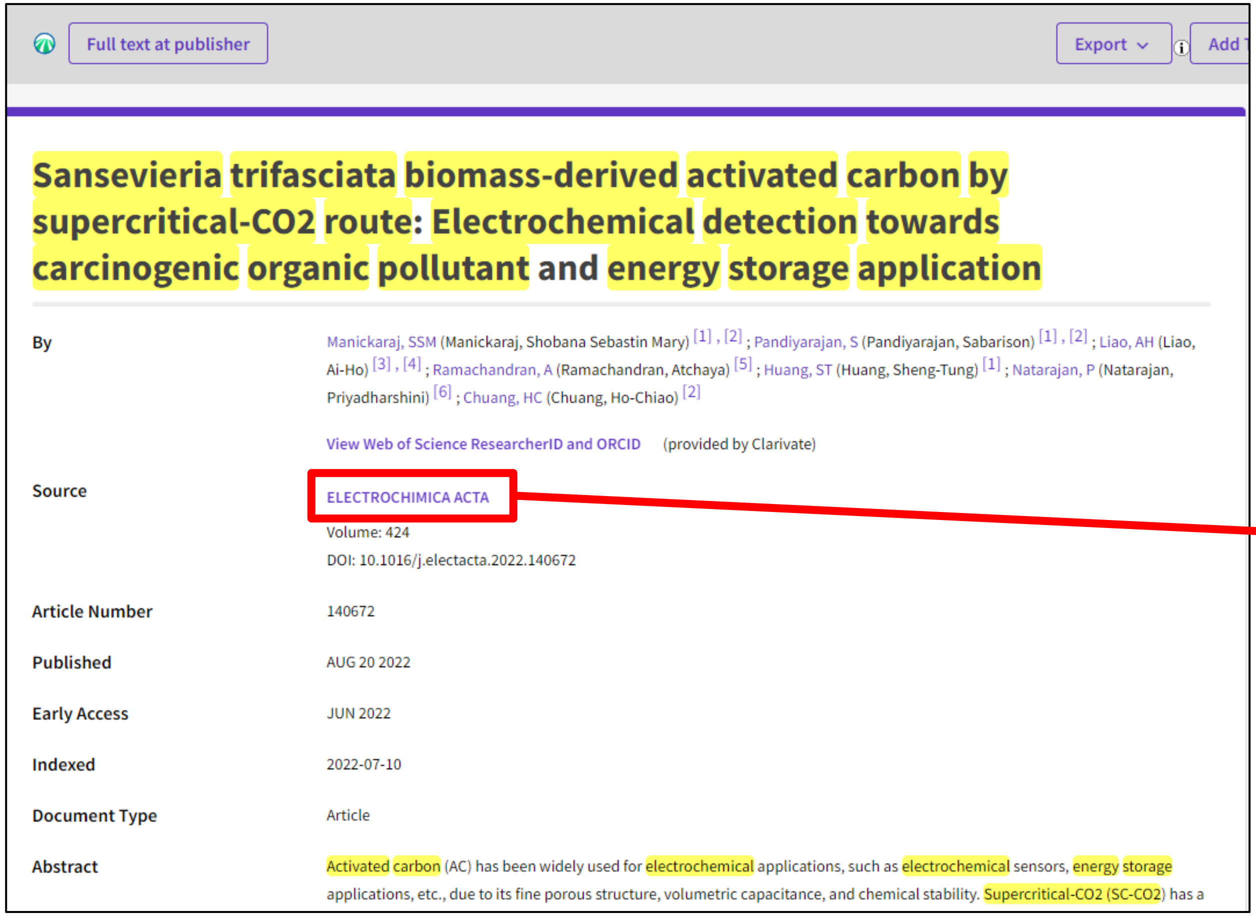
查詢W1方式-以WOS查詢

Step2:點選期刊名稱後，視窗右邊即顯示出Journal information欄位，點選【 Learn more】



Full text at publisher | Export | Add

Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

By: Manickaraj, SSM (Manickaraj, Shobana Sebastin Mary) [1], [2] ; Pandiyarajan, S (Pandiyarajan, Sabarison) [1], [2] ; Liao, AH (Liao, Ai-Ho) [3], [4] ; Ramachandran, A (Ramachandran, Atchaya) [5] ; Huang, ST (Huang, Sheng-Tung) [1] ; Natarajan, P (Natarajan, Priyadharshini) [6] ; Chuang, HC (Chuang, Ho-Chiao) [2]

View Web of Science ResearcherID and ORCID (provided by Clarivate)

Source: ELECTROCHIMICA ACTA
Volume: 424
DOI: 10.1016/j.electacta.2022.140672

Article Number: 140672

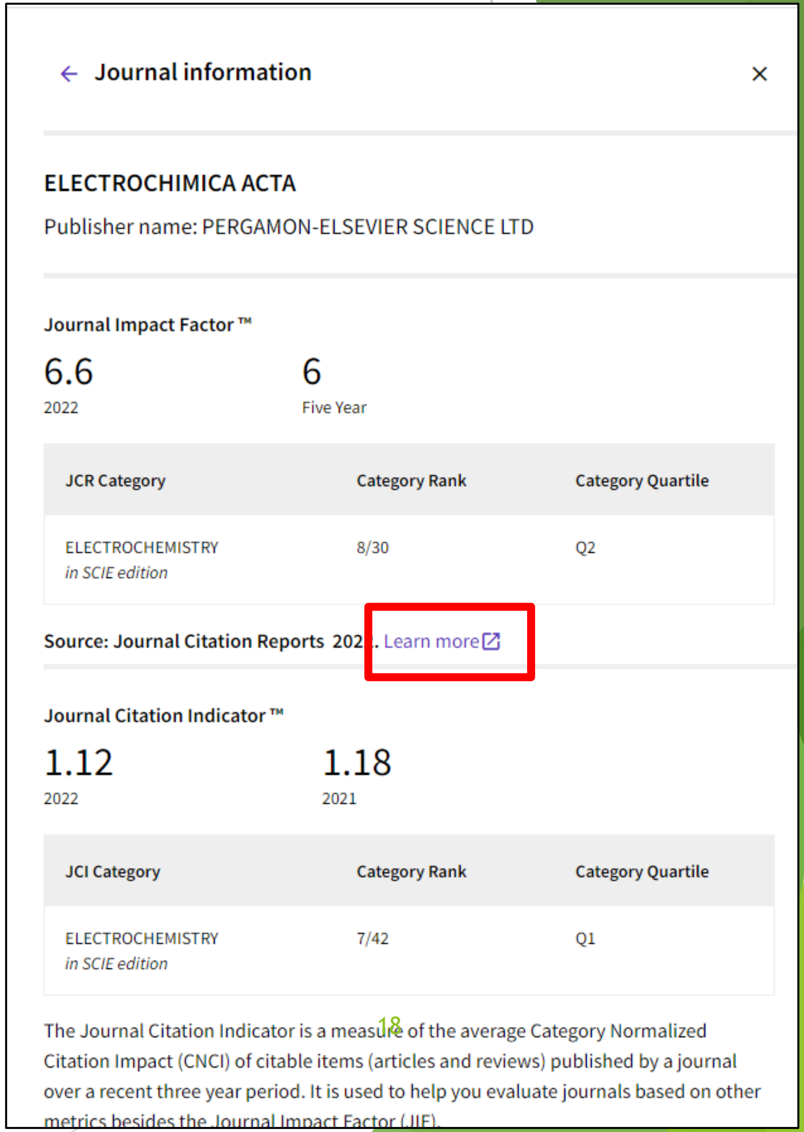
Published: AUG 20 2022

Early Access: JUN 2022

Indexed: 2022-07-10

Document Type: Article

Abstract: Activated carbon (AC) has been widely used for electrochemical applications, such as electrochemical sensors, energy storage applications, etc., due to its fine porous structure, volumetric capacitance, and chemical stability. Supercritical-CO2 (SC-CO2) has a



Journal information

ELECTROCHIMICA ACTA

Publisher name: PERGAMON-ELSEVIER SCIENCE LTD

Journal Impact Factor ™

6.6 (2022) 6 (Five Year)

JCR Category	Category Rank	Category Quartile
ELECTROCHEMISTRY *in SCIE edition*	8/30	Q2

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Journal Citation Indicator ™

1.12 (2022) 1.18 (2021)

JCI Category	Category Rank	Category Quartile
ELECTROCHEMISTRY *in SCIE edition*	7/42	Q1

The Journal Citation Indicator is a measure of the average Category Normalized Citation Impact (CNCI) of citable items (articles and reviews) published by a journal over a recent three year period. It is used to help you evaluate journals based on other metrics besides the Journal Impact Factor (JIF).

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查詢**W1**方式-以WOS查詢
Step3:選擇論文發表時的年份(如2022年發表，則應選擇2022年之JCR YEAR)

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JCR YEAR

2022

ELECTROCHIMICA ACTA

ISSN

0013-4686

EISSN

1873-3859

JCR ABBREVIATION

ELECTROCHIM ACTA

ISO ABBREVIATION

Electrochim. Acta

Journal information

EDITION

Science Citation Index Expanded (SCIE)

CATEGORY

ELECTROCHEMISTRY - SCIE

LANGUAGES	REGION	1ST ELECTRONIC JCR YEAR
Multi-Language	ENGLAND	1997

Publisher information

PUBLISHER	ADDRESS	PUBLICATION FREQUENCY
PERGAMON-ELSEVIER SCIENCE LTD	THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND	28 issues/year

Step4:滑至中間查詢排名，取百分位數最高之排名後，將期刊排名轉換成對應點數，7/42=16.6%，對應法規點數為10，並請**檢附查詢畫面當作佐證資料**

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EDITION
Science Citation Index Expanded (SCIE)

CATEGORY
ELECTROCHEMISTRY
8/30

JCR YEAR	JIF RANK	JIF QUARTILE	JIF PERCENTILE
2022	8/30	Q2	75.0
2021	7/30	Q1	78.33
2020	8/29	Q2	74.14
2019	5/27	Q1	83.33
2018	5/26	Q1	82.69

Rank by Journal Citation Indicator (JCI)

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CATEGORY
ELECTROCHEMISTRY
7/42

JCR YEAR	JCI RANK	JCI QUARTILE	JCI PERCENTILE
2022	7/42	Q1	84.52
2021	7/42	Q1	84.52
2020	7/39	Q1	83.33
2019	7/39	Q1	83.33
2018	6/37	Q1	85.14
2017	5/36	Q1	87.50

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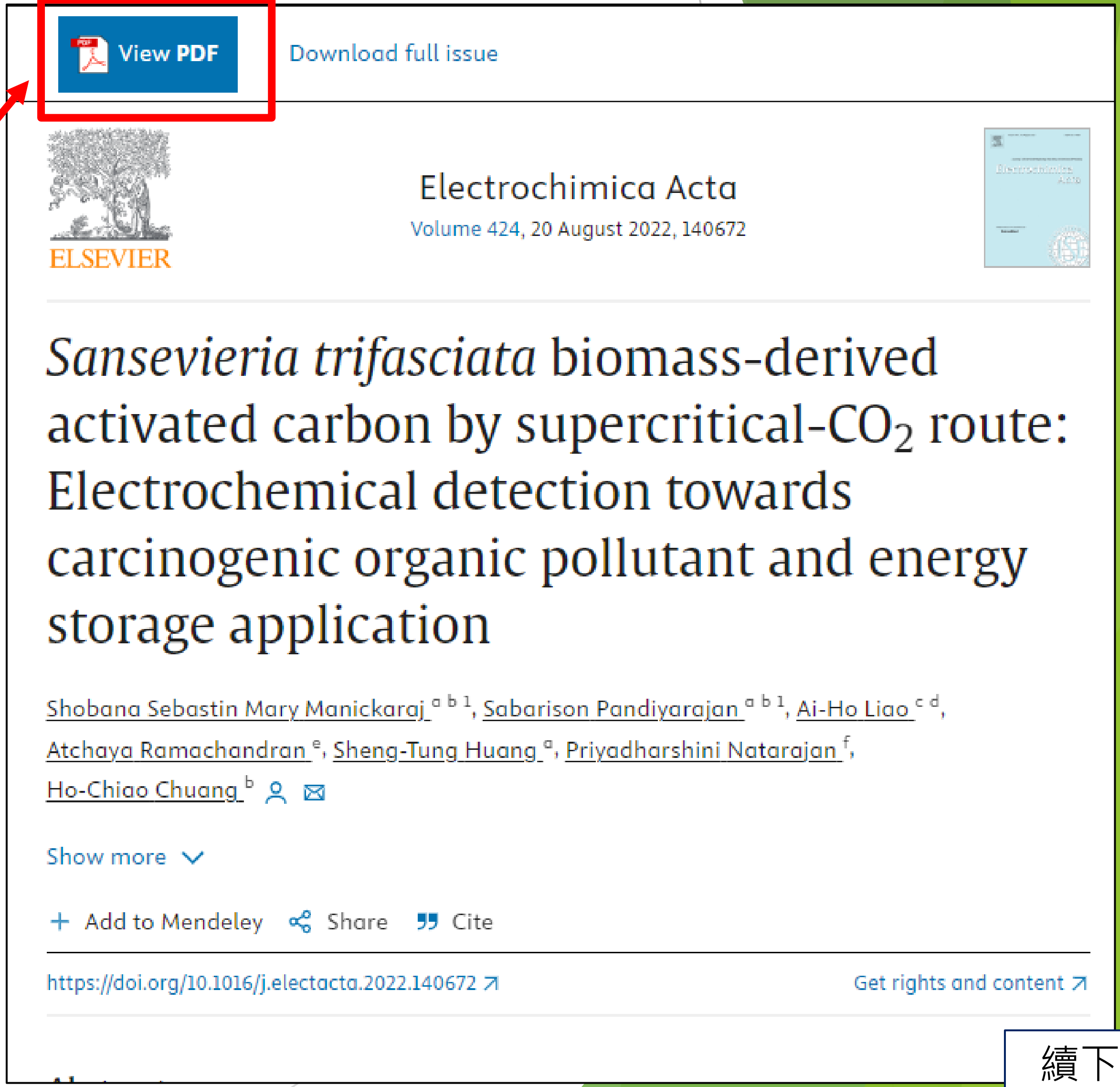

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Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

By　Manickaraj, SSM (Manickaraj, Shobana Sebastin Mary) [1], [2]; Pandiyarajan, S (Pandiyarajan, Sabarison) [1], [2]; Liao, AH (Liao, Ai-Ho) [3], [4]; Ramachandran, A (Ramachandran, Atchaya) [5]; Huang, ST (Huang, Sheng-Tung) [1]; Natarajan, P (Natarajan, Priyadharshini) [6]; Chuang, HC (Chuang, Ho-Chiao) [2]

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Source　ELECTROCHIMICA ACTA
Volume: 424
DOI: 10.1016/j.electacta.2022.140672

Article Number　140672

Published　AUG 20 2022

Early Access　JUN 2022

Indexed　2022-07-10

Document Type　Article

Abstract　Activated carbon (AC) has been widely used for electrochemical applications, such as electrochemical sensors, energy storage applications, etc., due to its fine porous structure, volumetric capacitance, and chemical stability. Supercritical-CO2 (SC-CO2) has a fascinating advantage in material science due to its microbubble cavitation, high diffusivity, and high permeability. In the shed of light, we developed a high porous Sansevieria trifasciata biomass-derived AC by SC-CO2 (SC-

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Electrochimica Acta
Volume 424, 20 August 2022, 140672

Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

Shobana Sebastin Mary Manickaraj [a b 1], Sabarison Pandiyarajan [a b 1], Ai-Ho Liao [c d], Atchaya Ramachandran [e], Sheng-Tung Huang [a], Priyadharshini Natarajan [f], Ho-Chiao Chuang [b]

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applied sciences

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Article

An Upper Extremity Rehabilitation System Using Efficient Vision-Based Action Identification Techniques

Yen-Lin Chen [1], Chin-Hsuan Liu [1], Chao-Wei Yu [1], Posen Lee [2,*] and Yao-Wen Kuo [1]

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Received: 30 May 2018; Accepted: 10 July 2018; Published: 17 July 2018

Featured Application: This study proposes an upper extremity rehabilitation system using efficient action identification system for home based on color and depth sensor information, and can perform well under complex ambient environments.

Abstract: This study proposes an action identification system for home upper extremity rehabilitation. In the proposed system, we apply an RGB-depth (color-depth) sensor to capture the image sequences of the patient's upper extremity actions to identify its movements. We apply a skin color detection technique to assist with extremity identification and to build up the upper extremity skeleton points. We use the dynamic time warping algorithm to determine the rehabilitation actions. The system presented herein builds up upper extremity skeleton points rapidly. Through the upper extremity of the human skeleton and human skin color information, the upper extremity skeleton points are effectively established by the proposed system, and the rehabilitation actions of patients are identified by a dynamic time warping algorithm. Thus, the proposed system can achieve a high recognition rate of 98% for the defined rehabilitation actions for the various muscles. Moreover, the computational speed of the proposed system can reach 125 frames per second—the processing time per frame is less than 8 ms on a personal computer platform. This computational efficiency allows efficient extensibility for future developments to deal with complex ambient environments and for implementation in embedded and pervasive systems. The major contributions of the study are: (1) the proposed system is not only a physical exercise game, but also a movement training program for specific muscle groups; (2) The hardware of upper extremity rehabilitation system included a personal computer with personal computer and a depth camera. These are economic equipment, so that patients who need this system can set up one set at home; (3) patients can perform rehabilitation actions in sitting position to prevent him/her from falling down during training; (4) the accuracy rate of identifying rehabilitation action is as high as 98%, which is sufficient for distinguishing between correct and wrong action when performing specific action trainings; (5) The proposed upper extremity rehabilitation system is real-time, efficient to vision-based action identification, and low-cost hardware and software, which is affordable for most families.

Keywords: upper extremity identification; color and depth sensors; skeleton points; rehabilitation actions; home rehabilitation; computer vision

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Electrochimica Acta

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Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

Shobana Sebastin Mary Manickaraj [a,b,1], Sabarison Pandiyarajan [a,b,1], Ai-Ho Liao [c,d], Atchaya Ramachandran [e], Sheng-Tung Huang [a], Priyadharshini Natarajan [f], Ho-Chiao Chuang [b,*]

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ARTICLE INFO

Keywords:
Activated carbon
Sansevieria trifasciata
Supercritical-CO_2
Electrochemical sensor
Supercapacitor

ABSTRACT

Activated carbon (AC) has been widely used for electrochemical applications, such as electrochemical sensors, energy storage applications, etc., due to its fine porous structure, volumetric capacitance, and chemical stability. Supercritical-CO_2 (SC-CO_2) has a fascinating advantage in material science due to its microbubble cavitation, high diffusivity, and high permeability. In the shed of light, we developed a high porous *Sansevieria trifasciata* biomass-derived AC by SC-CO_2 (SC-ST-AC). For comparison purposes, the AC was also prepared in a conventional approach (C-ST-AC). The prepared ACs were characterized through various spectroscopic and microscopic techniques to study their surface morphological character, structural analysis, and phase purity. The electrochemical performance was evaluated by two different applications: electrochemical detection and energy storage application. Based on the results, the SC-ST-AC exhibits higher porous architecture in their morphology and high phase purity with amorphous nature than C-ST-AC. In the preliminary electrochemical analysis, SC-ST-AC achieved higher performance than C-ST-AC. Thus, SC-ST-AC is applied to the real-time application and it exposed a superior limit of detection (0.005 μM L^{-1}) and sensitivity (0.854 μA $μM^{-1}$ cm^{-2}) towards MA sensing and higher specific capacitance (342.5 F/g for 2 A/g) with 92.09 % of retention at high current density. Thereby, we suggest the SC-CO_2 method is a promising approach to develop a highly porous carbon material with excellent electrochemical performance.

1. Introduction

In recent eras, carbon-based materials including one-dimension (1D) carbon nanotubes, carbon nanofibers [1,2], two-dimension (2D) graphene [3], three-dimension (3D) graphite, activated carbon, and its derivatives [4,5] have been extensively investigated as successful commercialization materials in several sectors. Among them activated carbon (AC) is considered the most cardinal material for electrochemical application owing to its high surface area, porous architecture, and chemical stability [6–8]. The varieties of functional group moiety fascinated on the surface make it as a promising electrode material for energy storage applications [9]. Traditionally, the preparation of AC is done by the pyrolysis of fossil raw materials such as coal and petroleum coke or wood, followed by a physical or chemical activation process [10]. Due to the rapid increase of the global population and economy, the demand for energy and resources is also increasing exponentially, resulting in a lack of fossil fuels [11]. Therefore, cost-effective renewable carbon sources, the development of economic efficiency methods, and environmental safety are all issues that must be thoroughly investigated to produce advanced activated carbon that is more environmentally friendly. In this regard, biomass materials are presently recognized as the most viable candidates for preparing carbon materials

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https://doi.org/10.1016/j.electacta.2022.140672
Received 10 January 2022; Received in revised form 25 May 2022; Accepted 1 June 2022
Available online 3 June 2022

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Research Papers

Novel incorporation of redox active organic molecule with activated carbon as efficient active material of supercapacitors

Tsung-Rong Kuo [a,b,*], Lu-Yin Lin [c], Subbiramaniyan Kubendhiran [c], Yi-Chiun Li [c], Ren-Jei Chung [c], Sibidou Yougbaré [d]

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ARTICLE INFO

Keywords:
Activated carbon
Coulombic efficiency
Redox active organic compounds
Flexible
Supercapacitor

ABSTRACT

Activated carbon (AC) is intensively applied as active material of supercapacitor (SC) due to high porosity and surface area. Incorporating battery-type materials in AC can enhance energy storage ability by generating redox reactions, but poor cycling stability of battery-type materials limits practical use of SC. Similar surface properties can be achieved by redox active organic compounds, which also possesses rich functional groups with extra redox ability. Unlike battery-type materials producing redox reactions from transition metals, incorporating organic molecule is expected to generate redox reactions without reducing cycling stability of AC. In this study, it is the first time to fabricate 1,4 benzene diboronic acid (DBA) and AC composite (DBA-AC) as active material of SC. The ratio of DBA and AC is optimized regarding to uniformity of DBA decoration. The optimized DBA-AC electrode presents a specific capacitance (C_F) of 211.4 F/g at 20 mV/s, owing to the largest surface area and abundant functional groups. A flexible symmetric SC based on the optimized DBA-AC electrodes shows the maximum energy density of 0.761 Wh/kg at the power density of 400 W/kg. The C_F retention of 110% and Coulombic efficiency higher than 95% after 10,000 times charge and discharge cycling process are also achieved.

1. Introduction

Energy generation and storage devices are quite important to solve the series energy issues for human beings [1–5]. Energy storage devices are eagerly developed for solving serious energy shortage problems. The high energy and power densities are significant for energy storage devices [6,7]. The excellent high-rate performance and long cycle life are also required to achieve wider applications [8,9]. Supercapacitor (SC) with high power density and long cycle life comparing to battery is a promising energy storage device to investigate [10–12]. The energy density of SC is also higher than the traditional capacitor. The energy storage mechanism of SC is classified into two sorts, electric double-layered capacitor (EDLC) and pseudocapacitor [13,14]. EDLC stores charges using ion adsorption and desorption mechanism, which promotes cycling stability but causes small energy density due to lack of Faradaic redox reactions [15].

Carbon materials are extensively used in SC applications due to their high conductivity, low cost and adaptable existing forms such as fibers, powders, and composites [16]. For instance, the carbon nanomaterials such as mesoporous carbon, activated carbon (AC) and graphitic nanocarbons with different morphologies including nanofibers, nanocoils, nanocones and nanotubes has been widely applied in EDLCs as electrode materials [17–20]. The capacitive and diffusive criteria of AC materials lie on the presence of mesopores in the structure. The high porosity can facilitate soft diffusion of ions and confer lower relaxation time. Especially the hierarchical porosity can accelerate electrolyte infiltration and ion diffusion, and hence can improve ion accessibility into the entire electrode. Numerous studies utilized waste biomass to produce AC with very low costs and excellent surface properties [21–24]. Ahmed and co-workers applied chemical activation method with help of $ZnCl_2$ as activation reagent to fabricate porous AC from rotten carrot [25]. Gupta and co-workers used KOH as activation reagent in chemical process to

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https://doi.org/10.1016/j.est.2022.105085
Received 16 February 2022; Received in revised form 10 May 2022; Accepted 10 June 2022
Available online 9 July 2022

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Research Papers

Investigating energy storage ability of MIL101-(Fe) derivatives prepared using successive carbonization and oxidation for supercapacitors

Yung-Fu Wu[a,1], Tsung-Rong Kuo[b,c,1,*], Lu-Yin Lin[d], Subbiramaniyan Kubendhiran[d], Kuan-Chen Lai[d], Tzu-Yang Chen[d], Sibidou Yougbaré[e]

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ARTICLE INFO

Keywords:
α-Fe_2O_3
Carbonization
Metal organic framework
MIL101(Fe)
Successive carbonization/oxidation
Supercapacitor

ABSTRACT

Metal organic framework (MOF) with high surface area and tunable porous size is largely used as active material of supercapacitor (SC). MIL-101(Fe) composed of iron ions and terephthalic acid ligand is candidate active material of SC owing to its possible formation of carbon and iron compounds. Combining carbon and metal compound is feasible to establish efficient active material with ion adsorption/desorption and redox reaction charge storage abilities. In this study, it is the first time to investigate physical and electrochemical properties of MIL101(Fe) derivatives synthesized using carbonization and successive carbonization/oxidation processes as active materials of SC. Carbonization temperature of MIL-101(Fe) is optimized regarding to morphology, composition and defect/graphization ratio. The highest specific capacitance (C_F) of 95.7 F/g at 20 mV/s is obtained for the carbonized MIL-101(Fe) (MIL101(Fe)-C) prepared at 800 °C, due to rough surface, hollow structure and suitable defect to graphization ratio. The MIL-101(Fe) and the successive carbonization/oxidation synthesized derivative electrodes merely achieve C_F values of 44.3 and 0.1 F/g, respectively. Symmetric SC fabricated using optimized MIL101(Fe)-C electrodes shows the maximum energy density of 1.13 Wh/kg at 400 W/kg and excellent cycling stability with C_F retention of 96% and Columbic efficiency of 72% in 8000 times repeated charging/discharging cycles.

1. Introduction

To solve serious energy shortage problems, developing efficient energy generation and storage devices are of great significance for human beings in recent years [1–8]. Batteries and capacitors are traditional energy storage devices which store charges by generating redox reactions and adsorbing/desorbing ions via static electricity, respectively [9]. By combining advantages of battery and capacitor, supercapacitor (SC) has been considered as one of effective energy storage devices owing to high specific power and long cycle life. SC stores charges by both ion adsorption/desorption and redox reactions, which mainly occurs on carbon materials and metal compounds, respectively [10,11]. Therefore, incorporating carbon materials with metal compounds as active material of SC is widely adopted to achieve excellent energy storage ability such as high specific energy and power as well as excellent cycling stability [12–14].

Metal organic framework (MOF) has been intensively applied as active material of SC, due to its high surface area and tunable porous size [15–18]. MOF with iron centers such as MIL-101(Fe) composed of coordinated iron ions linked by terephthalic acid ligands is promising active material of SC, due to the possible conversions to carbon material and iron compounds [19–21]. In previous studies, MIL-101(Fe) was commonly combined with carbon materials as active material of SC. Liu et al. prepared growth-oriented Fe-based MOF synergized with graphene aerogels composite for SC [1?]. The carbonization process was also applied on MIL-101 to fabricate carbon and metal oxide composites.

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https://doi.org/10.1016/j.est.2022.105420
Received 2 June 2022; Received in revised form 9 July 2022; Accepted 29 July 2022
Available online 4 August 2022

①　②　③

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Research Article

Direct Z-scheme WO_3/In_2S_3 heterostructures for enhanced photocatalytic reduction Cr(VI)

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ARTICLE INFO

Article history:
Received 24 May 2021
Received in revised form 2 March 2022
Accepted 7 March 2022
Available online 11 March 2022

Keywords:
In_2S_3
WO_3
Z-scheme photocatalyst
Photocatalytic Cr (VI) reduction

ABSTRACT

The design of efficient and stable photocatalysts for the removal of heavy metals in the environment has become a research hotspot. Here, a composite photocatalyst with three-dimensional In_2S_3 microspheres supported by WO_3 nanoparticles was synthesized for Cr(VI) for the first time. The constructed composite catalyst has a direct Z-scheme electron transport mechanism without any precious metals (Au, Pt, and Ag), quantum dots (TiO_2 QDs) or carbon materials (Graphene) as electronic media. Constructing a direct Z-scheme WO_3/In_2S_3 photocatalyst can greatly retain the reduction and oxidation reaction sites on the surface of the heterojunction and accelerate the reduction reaction. Under visible light irradiation, it greatly promotes the photocatalytic reduction of Cr(VI), which is 67.7 times and 3.6 times the reduction rates of WO_3 and In_2S_3, respectively. The favorable photocatalytic performance of WO_3/In_2S_3 should be attributed to the effective interfacial contact between the semiconductors in the Z-scheme system, thereby realizing effective electron transfer and charge separation. In addition, the stability of WO_3/In_2S_3 was studied, and a possible mechanism in the photoreduction process of Cr(VI) was proposed.

1. Introduction

With the development of industry, potentially toxic metals ions pose a major threat to the water environment [1–3]. As a common metal-chromium ions, it is widely used in electroplating, leather tanning, steelmaking, and chemical manufacturing [4–6]. Since Cr (VI) has a regular tetrahedral structure similar to PO_4^{3-} and SO_4^{2-}, it can easily enter cells through anion channels, which seriously affects human health and safety [7]. In 2019, chromium compounds with hexavalent were included in the list of toxic and harmful water pollutants. As we all know, Cr(III) as a trace element of the human body, has the advantages of low mobility in aquatic environment and easy formation of $Cr(OH)_3$ precipitation in neutral or alkaline environments, which has become an effective way to solve the pollution of Cr(VI) [8]. Generally, the sulfite or ferrous salt was used in industry to reduce Cr(VI) to Cr(III) in an acidic environment, and then alkali treatment is performed to obtain a precipitate [9]. This methods was prone to produce secondary solid waste and SO_2, which poses environmental hazards. In recent years, semiconductor photocatalysts have been generated electron-hole pairs under light excitation, in which electrons have strong reducibility without any pollution, and can be used to reduce Cr(VI) [10]. Wang et al. prepared CeO_2 nanotubes by a surfactant-assisted hydrothermal method for photoreduction of Cr (VI). The pure CeO_2 has weak photoreduction performance without adding oxalic acid [11]. Pan's group reported the use of ZnO to reduce Cr(VI) under ultraviolet light [12].

The photocatalysis has become a "green technology" for addressing environmental problems. To achieve the goal of photoreduction of Cr(VI), photocatalysts need to have narrower band gaps, more negative conduction band (CB) sites, and more positive valence band (VB) sites. This is difficult for a single photocatalytic material to have at the same time. The heterojunction catalytic system with Z-scheme electron transport mechanism can not only decrease the photo-generated electron-hole recombination rate, but also retain

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https://doi.org/10.1016/j.jallcom.2022.164488
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Received: 19 May 2022 | Revised: 29 October 2022 | Accepted: 8 November 2022
DOI: 10.1002/btm2.10450

BIOENGINEERING & TRANSLATIONAL MEDICINE

RESEARCH ARTICLE

Combined use of microbubbles of various sizes and single-transducer dual-frequency ultrasound for safe and efficient inner ear drug delivery

Ai-Ho Liao[1,2] | Chih-Hung Wang[3,4] | Bo-Han Wang[5] | Yi-Chun Lin[4] | Ho-Chiao Chuang[5] | Hao-Li Liu[6] | Cheng-Ping Shih[3]

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Funding information
Ministry of Science and Technology, Taiwan, Grant/Award Numbers: MOST108-2221-E-011-161-MY4, MOST110-2314-B-016-047-MY3, MOST110-2314-B-016-045, MOST109-2314-B-016-005; National Taiwan University of Science and Technology, Grant/Award Numbers: NTUST-TSGH-110-01, NTUST-TSGH-111-01; Tri-Service General Hospital, Grant/Award Numbers: TSGH-D-111059, TSGH-A-111001, TSGH-A-110001; Medical Affairs Bureau, Ministry of National Defense, ROC, Grant/Award Number: MAB-D-111145

Abstract
We have previously applied ultrasound (US) with microbubbles (MBs) to enhance inner ear drug delivery, with most experiments conducted using single-frequency, high-power density US, and multiple treatments. In the present study, the treatment efficacy was enhanced and safety concerns were addressed using a combination of low-power-density, single-transducer, dual-frequency US (I_{SPTA} = 213 mW/cm^2) and MBs of different sizes coated with insulin-like growth factor-1 (IGF-1). This study is the first to investigate the drug-coating capacity of human serum albumin (HSA) MBs of different particle sizes and their drug delivery efficiency. The concentration of HSA was adjusted to produce different MB sizes. The drug-coating efficiency was significantly higher for large-sized MBs than for smaller MBs. In vitro Franz diffusion experiments showed that the combination of dual-frequency US and large MB size delivered the most IGF-1 (24.3 ± 0.47 ng/cm^2) to the receptor side at the second hour of treatment. In an in vivo guinea pig experiment, the efficiency of IGF-1 delivery into the inner ear was 15.9 times greater in animals treated with the combination of dual-frequency US and large MBs (D-USMB) than in control animals treated with round window soaking (RWS). The IGF-1 delivery efficiency was 10.15 times greater with the combination of single-frequency US and large size MBs (S-USMB) than with RWS. Confocal microscopy of the cochlea showed a stronger distribution of IGF-1 in the basal turn in the D-USMB and S-USMB groups than in the RWS group. In the second and third turns, the D-USMB group showed the greatest IGF-1 distribution.

Ai-Ho Liao and Chih-Hung Wang contributed equally to this study.

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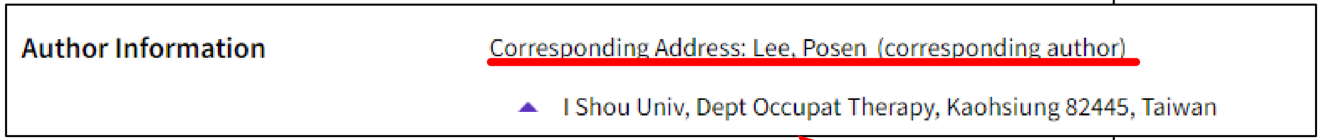

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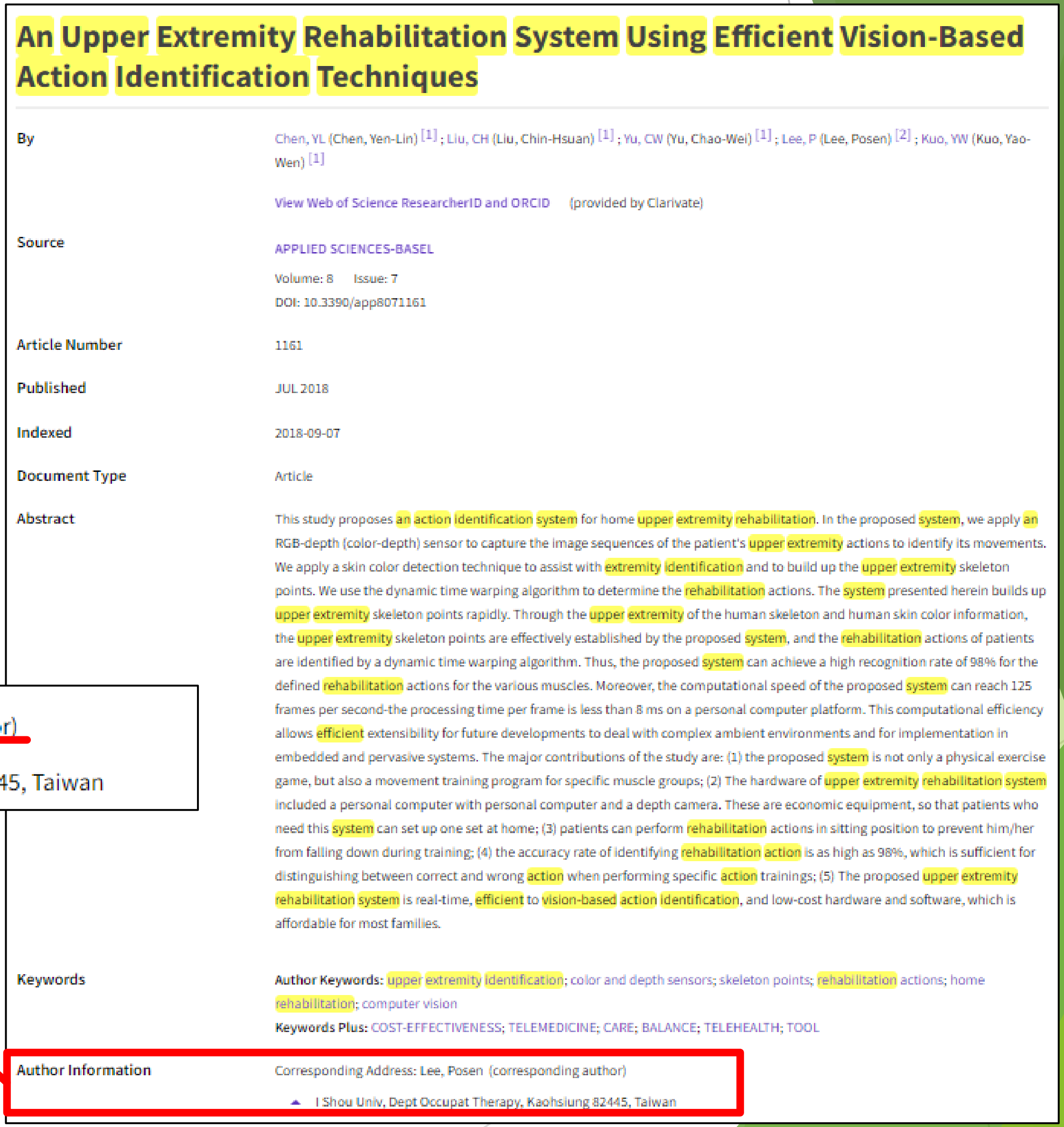

An Upper Extremity Rehabilitation System Using Efficient Vision-Based Action Identification Techniques

By	Chen, YL (Chen, Yen-Lin) [1] ; Liu, CH (Liu, Chin-Hsuan) [1] ; Yu, CW (Yu, Chao-Wei) [1] ; Lee, P (Lee, Posen) [2] ; Kuo, YW (Kuo, Yao-Wen) [1] View Web of Science ResearcherID and ORCID (provided by Clarivate)
Source	APPLIED SCIENCES-BASEL Volume: 8 Issue: 7 DOI: 10.3390/app8071161
Article Number	1161
Published	JUL 2018
Indexed	2018-09-07
Document Type	Article
Abstract	This study proposes an action identification system for home upper extremity rehabilitation. In the proposed system, we apply an RGB-depth (color-depth) sensor to capture the image sequences of the patient's upper extremity actions to identify its movements. We apply a skin color detection technique to assist with extremity identification and to build up the upper extremity skeleton points. We use the dynamic time warping algorithm to determine the rehabilitation actions. The system presented herein builds up upper extremity skeleton points rapidly. Through the upper extremity of the human skeleton and human skin color information, the upper extremity skeleton points are effectively established by the proposed system, and the rehabilitation actions of patients are identified by a dynamic time warping algorithm. Thus, the proposed system can achieve a high recognition rate of 98% for the defined rehabilitation actions for the various muscles. Moreover, the computational speed of the proposed system can reach 125 frames per second-the processing time per frame is less than 8 ms on a personal computer platform. This computational efficiency allows efficient extensibility for future developments to deal with complex ambient environments and for implementation in embedded and pervasive systems. The major contributions of the study are: (1) the proposed system is not only a physical exercise game, but also a movement training program for specific muscle groups; (2) The hardware of upper extremity rehabilitation system included a personal computer with personal computer and a depth camera. These are economic equipment, so that patients who need this system can set up one set at home; (3) patients can perform rehabilitation actions in sitting position to prevent him/her from falling down during training; (4) the accuracy rate of identifying rehabilitation action is as high as 98%, which is sufficient for distinguishing between correct and wrong action when performing specific action trainings; (5) The proposed upper extremity rehabilitation system is real-time, efficient to vision-based action identification, and low-cost hardware and software, which is affordable for most families.
Keywords	Author Keywords: upper extremity identification; color and depth sensors; skeleton points; rehabilitation actions; home rehabilitation; computer vision Keywords Plus: COST-EFFECTIVENESS; TELEMEDICINE; CARE; BALANCE; TELEHEALTH; TOOL
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Sansevieria trifasciata biomass-derived activated carbon by supercritical-CO_2 route: Electrochemical detection towards carcinogenic organic pollutant and energy storage application

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ARTICLE INFO

Keywords:
Activated carbon
Sansevieria trifasciata
Supercritical-CO_2
Electrochemical sensor
Supercapacitor

ABSTRACT

Activated carbon (AC) has been widely used for electrochemical applications, such as electrochemical sensors, energy storage applications, etc., due to its fine porous structure, volumetric capacitance, and chemical stability. Supercritical-CO_2 (SC-CO_2) has a fascinating advantage in material science due to its microbubble cavitation, high diffusivity, and high permeability. In the shed of light, we developed a high porous *Sansevieria trifasciata* biomass-derived AC by SC-CO_2 (SC-ST-AC). For comparison purposes, the AC was also prepared in a conventional approach (C-ST-AC). The prepared ACs were characterized through various spectroscopic and microscopic techniques to study their surface morphological character, structural analysis, and phase purity. The electrochemical performance was evaluated by two different applications: electrochemical detection and energy storage application. Based on the results, the SC-ST-AC exhibits higher porous architecture in their morphology and high phase purity with amorphous nature than C-ST-AC. In the preliminary electrochemical analysis, SC-ST-AC achieved higher performance than C-ST-AC. Thus, SC-ST-AC is applied to the real-time application and it exposed a superior limit of detection (0.005 $\mu M\ L^{-1}$) and sensitivity (0.854 $\mu A\ \mu M^{-1}\ cm^{-2}$) towards MA sensing and higher specific capacitance (342.5 F/g for 2 A/g) with 92.09 % of retention at high current density. Thereby, we suggest the SC-CO_2 method is a promising approach to develop a highly porous carbon material with excellent electrochemical performance.

1. Introduction

In recent eras, carbon-based materials including one-dimension (1D) carbon nanotubes, carbon nanofibers [1,2], two-dimension (2D) graphene [3], three-dimension (3D) graphite, activated carbon, and its derivatives [4,5] have been extensively investigated as successful commercialization materials in several sectors. Among them activated carbon (AC) is considered the most cardinal material for electrochemical application owing to its high surface area, porous architecture, and chemical stability [6–8]. The varieties of functional group moiety fascinated on the surface make it as a promising electrode material for energy storage applications [9]. Traditionally, the preparation of AC is done by the pyrolysis of fossil raw materials such as coal and petroleum coke or wood, followed by a physical or chemical activation process [10]. Due to the rapid increase of the global population and economy, the demand for energy and resources is also increasing exponentially, resulting in a lack of fossil fuels [11]. Therefore, cost-effective renewable carbon sources, the development of economic efficiency methods, and environmental safety are all issues that must be thoroughly investigated to produce advanced activated carbon that is more environmentally friendly. In this regard, biomass materials are presently recognized as the most viable candidates for preparing carbon materials

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https://doi.org/10.1016/j.electacta.2022.140672
Received 10 January 2022; Received in revised form 25 May 2022; Accepted 1 June 2022
Available online 3 June 2022
0013-4686/

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Combining the wavelet transform with a phase-lead compensator to a respiratory motion compensation system with an ultrasound tracking technique in radiation therapy

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ARTICLE INFO

Keywords:
Wavelet transform
Respiratory motion compensation
Ultrasound image tracking

ABSTRACT

This study evaluated the feasibility of applying the wavelet transform (WT) combined with a phase-lead compensator (PLC) to our previously developed two-dimensional respiratory motion compensation system (RMCS). This system automatically and instantaneously adjusts PLC parameters according to different respiration signals to reduce influences of the system delay time, improving the compensation effect of the RMCS during respiratory motion compensation. This study performed respiratory movement compensation experiments with a two-dimensional respiratory motion simulation system (RMSS) and the RMCS. Human respiratory signals were captured using our previously developed ultrasound image tracking algorithm (UITA). In this study, a displacement compensation RMCS algorithm based on the combination of WT and PLC was developed by LabVIEW, which allows an automatic adjustment of the PLC parameters according to various respiratory waveforms, achieving a better compensation effect. The experiment results indicated that the compensation rate (CR) of right-left and superior-inferior directions had both improved 67.96–88.05% and 70.38–91.43%, respectively. In this study, the proposed method combined with WT and PLC applied in respiratory movement compensation experiments; the UITA was used for tracking diaphragm motion which substitutes for tumor motion. This noninvasive monitoring method also helps reduce side effects after treatment. The experimental results indicated that the effect of using the WT combined with the PLC to compensate for various respiratory signals was improved over our previously developed compensation algorithm.

1. Introduction

During radiotherapy, the anatomical structure and location of a lesion are usually different from those of the target used in the treatment planning system. One of the main reasons for this is the organ movement that occurs while breathing, which also causes the tumor to deviate from the original irradiation target position during the treatment [1–3]. The tumor movement makes actual dose distribution differ from the expected dose distribution, resulting insufficient dose coverage on target tumor and excessive dose on surrounding tissues. The unwanted dose distribution increases serious side effects and great reduction of treatment effectiveness. Langen et al. [4] documented many types of organ movements, including types of the liver, diaphragm, kidney, pancreas, lung tumors, and prostate. Diaphragm and liver are affected by

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https://doi.org/10.1016/j.bspc.2022.103892
Received 21 March 2022; Received in revised form 23 May 2022; Accepted 12 June 2022
Available online 17 June 2022

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Robust fabrication of silver pyro-vanadates via sonochemical approach for advanced energy storage application

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ARTICLE INFO

Article history:
Received 14 June 2021
Received in revised form 9 September 2021
Accepted 5 October 2021
Available online 8 October 2021

Keywords:
Silver pyro-vanadates
Ultrasonication, Specific capacity
Energy storage systems

ABSTRACT

One of the major challenges in the twenty-first century is the development of ultrahigh performance electrical energy storage (ES) devices with faster, safer, and more efficient ES materials. Herein, we report newly designed silver vanadates ($Ag_4V_2O_7$), which serve as significant electrode material for upcoming ES devices due to its greater electrical conductivity as well as electrochemical activity. $Ag_4V_2O_7$ were synthesized by the ultrasonication method. The as-synthesized material was characterized with various spectral as well as analytical methods. Furthermore, the supercapacitive property of $Ag_4V_2O_7$ was evaluated using different electroanalytical techniques. The $Ag_4V_2O_7$ electrode exhibited well electrochemical performance with a specific capacity (C_{sp}) of 548 C g^{-1} at the current density of 1 Ag^{-1} and significant capacity retention of 88.7% even after 5000 GCD cycles at 6 Ag^{-1}. The lowest value of charge transfer resistance (R_{ct} = 4.12 Ω), and equivalent series resistance (ESR =6.33 Ω) exposed the faster reaction kinetics. The superior electrochemical performance was ascribed to its unique structure, which contributes to high conductivity, easy electron transfer, short ion diffusion distances, fast kinetics as well as a huge number of active sites in the electrode material. The electrochemical results demonstrated that $Ag_4V_2O_7$ could be utilized as electroactive material for advanced energy storage systems.

1. Introduction

Energy crisis is one of the most pressing problems in the current scenario. Considerations about greenhouse effect have prompted researchers to perform a detailed investigation on energy conversion as well as storage technology [1]. In order to solve this issue, fuel cells, batteries and supercapacitors have become more popular as strong candidates [2]. Supercapacitors (SCs) have received a lot of attention as a type of high-efficiency energy storage device because they can deliver more power density with a longer cycling lifespan than batteries and store more energy density than conventional capacitors. Furthermore, due to their rapid rechargeability, much greater cycling stability, and higher rate capability, SCs are good alternatives for a battery replacement if their energy density is significantly high [3–6].

Based on the principle of charge storage process, there are three types of SCs: the electric double layer (EDLC) [7], pseudocapacitors (PCs) [8] as well as hybrid capacitors [9]. The former is distinguished primarily via ion as well as electron separation at the electrode/electrolyte interface, while a Faradaic charge transfer reaction takes place at the active material in a redox pseudo capacitor. Hybrid capacitors are operating by the combination of Faradaic as well as Non-Faradaic reactions. Many researchers have made great efforts to study PCs because their energy density is substantially higher than EDLCs [10,11].

Because of the large C_{sp} and superlative redox activity, transition metal oxides (TMOs) have been found to be promising as electrodes for PCs over the last few decades [12–14]. Several TMOs, like RuO_2, MnO_2, NiO, Co_3O_4, MoO_2 and SnO_2 were efficiently used as electrode materials in PCs. During the charge/discharge processes, PCs with these kinds of electrodes invariably exhibited poor stability, high resistance as well as large volume changes[15]. To address this concern, mixed TMOs have emerged as promising electrodes for SCs, owing to their ability to improve electrochemical performance in terms of structural stability, specific capacity as well as electrical conductivity[16]. Among the TMOs, mixed metal oxides, binary,

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https://doi.org/10.1016/j.jallcom.2021.162268

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共同作者數 (W3)
☐無(x1)
☐1位通訊作者 (x1)
☐2位(含)以上通訊作者(x0.8)
☐有多位作者 Equal Contribution (x0.8)

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以林律吟教授之論文為例: (有多位共同貢獻作者之狀況)

本篇文章有**多位Equal Contribution**，對應法規應**x0.8**

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JOURNAL OF ALLOYS AND COMPOUNDS

Investigating energy storage ability of ZIF67-derived perovskite fluoride via tuning ammonium fluoride amounts

Pin-Yan Lee[a,1], Lu-Yin Lin[a,b,*,1]

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A R T I C L E I N F O

Article history:
Received 7 July 2021
Received in revised form 25 September 2021
Accepted 28 September 2021
Available online 29 September 2021

Keywords:
Ammonia fluoride
Ligand
Perovskite
Supercapacitor
ZIF67
2-methylimidazole

A B S T R A C T

Zeolitic imidazolate framework 67 (ZIF67) is widely considered as potential active material for supercapacitors (SC) due to large surface area and tunable structures, but small electrical conductivity limits its energy storage ability. Fluoride with high electrical conductivity is reported to be beneficial on reducing charge-transfer resistance of SC. In this study, ZIF67-derived perovskite fluoride is synthesized using ammonium fluoride (NH_4F) as electroactive material of SC at the first time. Different NH_4F amounts are used to produce perovskite ZIF67-derived fluorides (ZIF67-N). The optimized ZIF67-N electrode shows specific capacitance (C_F) of 636.8 F/g at 10 mV/s, owing to small particle size and suitable F^- to 2-methylimidazole ratio for providing high electronegativity. The ZIF67 and cobalt nickel fluoride prepared using NH_4F but no 2-methylimidazole (CoNi-N) are synthesized to understand roles of fluorine and 2-methylimidazole on energy storage. The ZIF67 electrode shows much smaller C_F (1.6 F/g) than ZIF67-N electrode, owing to largely enhanced pore width of ZIF67-N even if surface area is largely reduced when NH_4F is added during synthesis. The SC comprising optimized ZIF67-N electrodes shows maximum energy density of 27.2 Wh/kg at 650.0 W/kg as well as C_F retention of 86% and Coulombic efficiency of 100% in 8000 times charge/discharge process.

1. Introduction

Metal organic framework (MOF) with high surface area and tunable structure has been largely applied on energy storage for recent years [1–4]. Zeolitic imidazolate framework 67 (ZIF67) consisted of cobalt ion center and 2-methylimidazole ligand is one of the potential electroactive materials for supercapacitors (SC) [5–7]. However, the intrinsic nature of ZIF67 is not highly capacitive for storing charges even if ZIF67 possesses high surface area for carrying out large amounts of electrochemical reactions. Numerous ex-situ methods were applied on modifying ZIF67 with high redox activity and electrical conductivity. Zhang and co-workers prepared ZIF-derived carbon using co-carbonization technique and obtained a specific capacitance (C_F) of 228 F/g at 0.1 A/g [8]. Hu *et al.* assembled SC using ZIF-67@amorphous ZIF electrode and capacity retention of 100% after 2000 cycles was obtained [9]. Zhang *et al.* synthesized amorphous carbon@graphite carbon nanoleaves by carbonization of ZIF-L(Zn)@ZIF67 nanoleaves and achieved C_F of 252.1 F/g [10]. Combining ZIF67 with carbon materials is also applied to improve energy storage ability of ZIF67 [11,12]. Jian *et al.* designed cobalt sulfide nanocage derived from ZIF interconnected by carbon nanotubes as electrode material for SC [11]. Sundriya et al. synthesized ZIF67 and reduced graphene oxide (rGO) composite using stirring approach and obtained C_F of 326 F/g at 3 A/g [12].

However, comparing to the ex-situ method, the in-situ method is more likely to reduce the experimental process via directly modifying the process of forming MOF derivatives at the very beginning. Also, the nature of MOF derivatives could be much easier to design using in-situ techniques. It was reported that ligand plays important roles on intrinsic properties of MOF, such as chemical stability, rigidity and flexibility [13–15]. Lv *et al.* proposed that stability of MOF relies on robustness of metal ion/ligand coordination bonds. They demonstrated a ligand-rigidification strategy to enhance stability of MOF, including thirteen Zr-based MOF constructed with $Zr_6O_4(OH_4)$ $(-CO_2)_n$ units and corresponding ligands [illegible]. Replacing ligand in ZIF67 to synthesize derivatives may be possible to improve the energy storage ability. Ammonium fluoride has been reported to play

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https://doi.org/10.1016/j.jallcom.2021.162191

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□無(x1)
□1位通訊作者(x1)
□2位(含)以上通訊作者(x0.8)
□有多位作者 Equal Contribution (x0.8)

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查詢W3方式

注意事項:

1. 國際學者的定義:**除台灣以外**皆是外國，且單位須為**學術機構(學校、研究機構)**。
2. 需檢附論文第一頁為佐證資料。

（二）作者排序(W2)：作者排序與相對應的權重。

作者排序	第一作者	通訊作者	第二作者	第三作者	第四作者	第五作者以上
權重 2 (W2)	1	1	0.8	0.6	0.4	0.2

（三）共同作者數(W3)：

1. 若為通訊作者，且該篇文章有兩位以上通訊作者，則該篇須乘以0.8，惟如與國際學者合著者，該國際學者不受此限。
2. 如申請者同屬該篇文章多位 Equal Contribution 之一，則該篇應乘以0.8。

通訊作者數	1 位通訊作者	2 位(含)以上通訊作者 (若其他通訊作者皆為國際學者則不需 x0.8)	有多位 Equal Contribution
權重 3 (W3)	1	0.8	0.8

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為第一作者	1	1
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為通訊作者，且兩位以上 (都是國內學者)	1	0.8
為通訊作者，且兩位以上 (除了申請人以外都是國外學者)	1	1
第二作者後，且不是通訊作者	對應點數	1
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3. W2非為通訊作者且無Equal Contribution者，W3請直接勾選【無】；
W2為通訊作者者，W3請依實際狀況勾選【1位通訊作者、2位(含)以上通訊作者】。
如為Equal Contribution，W3請勾選【有多位作者】，W2則依實際狀況勾選。

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依ppt第21.22頁方式下載論文檔案，作者下方之區域，可以看到企業
以莊賀喬教授之論文為例:
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3D-flower-like porous neodymium molybdate nanostructure for trace level detection of organophosphorus pesticide in food samples

Muthusankar Ganesan [a,c], Ramadhass Keerthika Devi [b], Ai-Ho Liao [d,e], Kuo-Yu Lee [f], Gopu Gopalakrishnan [c], Ho-Chiao Chuang [a,*]

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[b] *Department of Chemical Engineering and Biotechnology, College of Engineering, National Taipei University of Technology, Taipei 106, Taiwan, ROC*
[c] *Department of Industrial Chemistry, Alagappa University, Karaikudi 630003, Tamil Nadu, India*
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[e] *Department of Biomedical Engineering, National Defense Medical Center, Taipei, Taiwan*
[f] *SV Probe Technology Taiwan Co., Ltd. Zhubei, Taiwan*

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企業通常為**crop、Ltd、醫院**，若非前述情況，可於Scival上查詢是否屬企業
Step1:登入Scival，點選左列【房子圖案】，輸入欲查詢企業(以工研院Industrial Technology Research Institute為例)後，點選欲查詢企業
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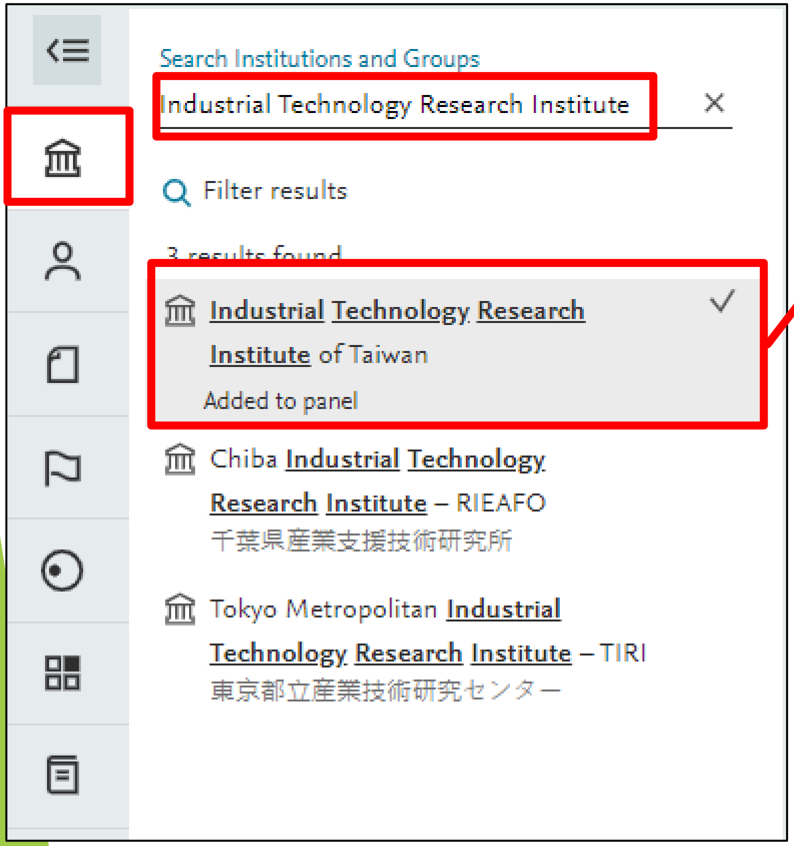
*工研院查詢結果為政府機構，故不能勾選企業



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Step2:頁面將自動跳轉至此，將隱藏欄位點出即可看見論文所屬之SDG類別
Step3:確定有SDG後，即可勾選對應欄位，並請**檢附查詢畫面當作佐證資料**

以莊賀喬教授之論文為例:


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論文
來源出版物種類
期刊
ISSN：
23806761
DOI
10.1002/btm2.10450
展開
Combined use of microbubbles of various sizes and single-transducer dual-frequency ultrasound for safe and efficient inner ear drug delivery
Liao, Ai-Ho[a, b]; Wang, Chih-Hung[c, d]; Wang, Bo-Han[e]; Lin, Yi-Chun[d]; Chuang, Ho-Chiao[e]; Liu, Hao-Li[f]; Shih, Cheng-Ping[c]
將全部儲存到作者清單
[a] Graduate Institute of Biomedical Engineering, National Taiwan University of Science and Te... Taiwan
[b] Department of Biomedical Engineering, National Defense Medical Center, Taipei, Taiwan
[c] Department of Otolaryngology-Head and Neck Surgery, Tri-Service General Hospital, Natio... Medical Center, Taipei, Taiwan
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Development of thermosensitive poloxamer 407-based microbubble gel with ultrasound mediation for inner ear drug delivery
Liao, A.-H. , Shih, C.-P. , Li, M.-W.
(2021) Drug Delivery
Effects of microbubble size on ultrasound-
摘要
作者關鍵字
已索引的關鍵字
永續發展目標 2023
裝置商品名
熱門主題
化學品和 CAS 登記編號
計量
摘要
We have previously applied ultrasound (US) with microbubbles (MBs) to enhance delivery, with most experiments conducted using single-frequency, high-power de... multiple treatments. In the present study, the treatment efficacy was enhanced an... concerns were addressed using a combination of low-power-density, single-transducer, dual-frequency US (I_{SPTA} = 213 mW/cm^2) and MBs of different sizes coated with insulin-like growth factor 1 (IGF-1). This study is the first to investigate the drug-coating capacity of human serum albumin (HSA) MBs of different particle sizes and their drug delivery efficiency. The concentration of HSA was adjusted to produce different MB sizes. The drug-coating efficiency was significantly higher for large-sized MBs than for smaller MBs. In vitro Franz diffusion experiments showed that the combination of dual-frequency US and large MB size delivered the most IGF-1 (24.3± 0.47 ng/cm^2) to the receptor side at the second hour of treatment. In an in vivo

摘要
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cavitation; drug delivery; dual-frequency ultrasound; hair cell; inner ear; insu... growth factor 1 (IGF-1); microbubbles; round window membrane
已索引的關鍵字
永續發展目標 2023 新增
對應到本文獻之永續發展目標
永續發展夥伴關係
目標 17

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查詢W4方式-SDG(方法二)
Step1:登錄至SciVal，輸入老師名字後，點選【View list of publications】
Step2:篩選所欲查詢教師之機構、年份區間與文獻類型後，點選【Apply filter】
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Step3:等Apply filter按鈕反灰後，點選【Export spreadsheet】

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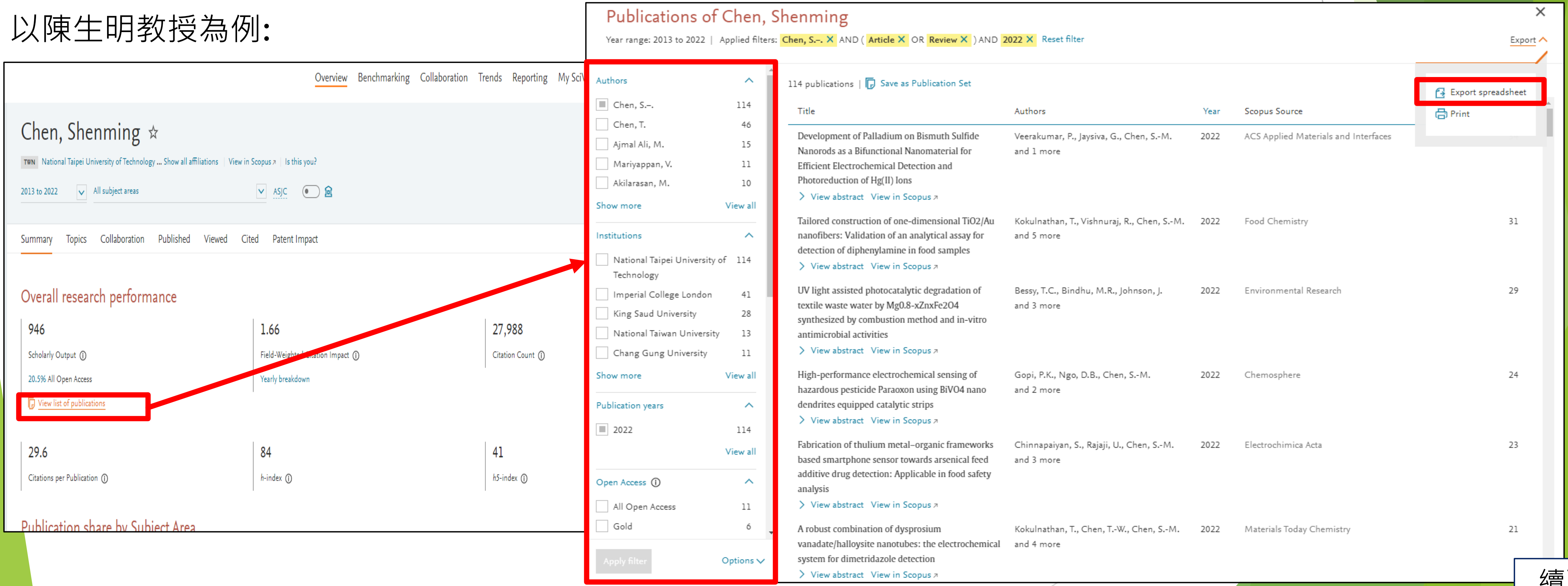

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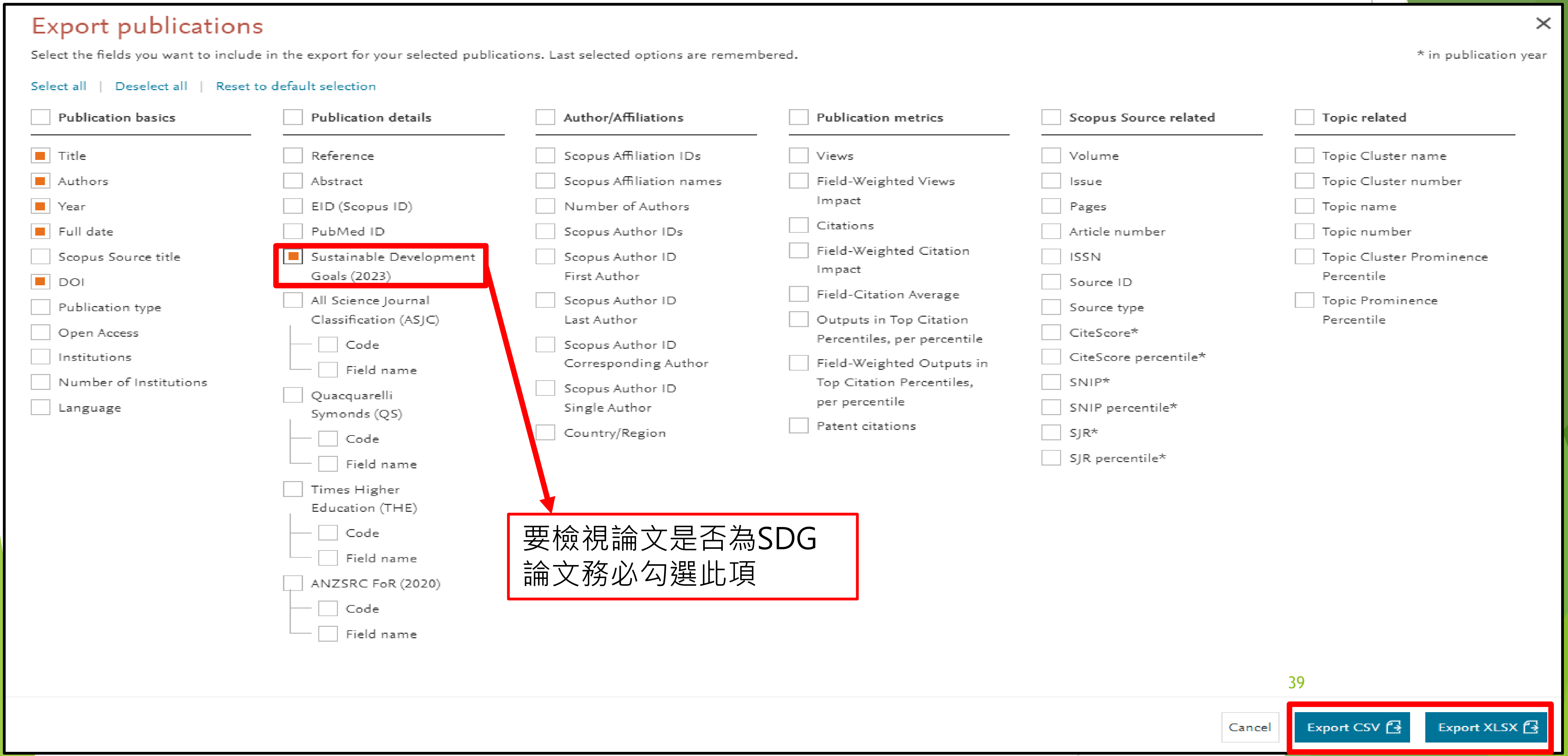
查詢W4方式-SDG(方法二)

Step4:勾選欲匯出之項目再點選【Export CSV】或【Export XLSX】，即可下載檔案



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查詢W4方式-SDG(方法二)

Step5:匯出的表單即會列出被收錄SDG之論文，確定有SDG後，即可勾選對應欄位，並請**檢附匯出表單當作佐證資料**

Data set	Publications of Chen, Shenming					
Year range	2013 to 2022					
Subject cla	ASJC					
Filtered by	not filtered					
Types of p	All publication types					
Self-citatic	-					
Data sourc	Scopus					
Date last u	1 November 2023					
Date expor	8 November 2023					
10 publications match the selected filter options:						
Authors	Chen, Shenming -m AND Akilarasan, Muthumariappan					
Publicatior		2022				
Publicatior	(Review OR Article)					
Title	Authors	Year	Scopus Source title	DOI	Publication typ	Sustainable Development Goals (2023)
Tailored ar	Keerthika I	2022	Food Chemistry	10.1016/j.foodchem.2022.133791	Article	-
In-situ con	Nataraj, N.	2022	Chemical Engineering Journal	10.1016/j.cej.2022.137025	Article	-
Se substitu	Nataraj, N.	2022	Chemosphere	10.1016/j.chemosphere.2022.134765	Article	SDG 3
Rational sy	Akilarasan	2022	Bioelectrochemistry	10.1016/j.bioelechem.2022.108145	Article	-
Electroche	Yamuna, A	2022	Journal of Electroanalytical Chemistry	10.1016/j.jelechem.2021.115978	Article	-
Fabricatior	Sundaresar	2022	Micromachines	10.3390/mi13060876	Article	-
One-pot sy	Babulal, S.	2022	Materials Today Chemistry	10.1016/j.mtchem.2022.101132	Article	SDG 3
Rationally	Tamilalaga	2022	Colloids and Surfaces A: Physicochemical and Engineering Aspects	10.1016/j.colsurfa.2022.129941	Article	-
Synthesis c	Maheshwa:	2022	Bioelectrochemistry	10.1016/j.bioelechem.2022.108166	Article	-
In-situ syn	Akilarasan	2022	Process Safety and Environmental Protection	10.1016/j.psep.2022.07.011	Article	-

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查詢**W4**方式-SSCI (方法一)
Step1:依ppt第21.22頁方式查詢論文，帶入論文資料畫面後，點選【全文選項】
Step2:顯示出下拉選單後，點選【SCIE】，直接帶出Wos查詢畫面
Step3:確定有SSCI後，即可勾選對應欄位，並請**檢附查詢畫面當作佐證資料**

額外加權 (W4)
☐無(x1) ☐企業 (x1.1) ☐SDG (x1.1) ☐SSCI (x1.5) ☐企業、SDG (x1.2) ☐企業、SSCI (x1.6) ☐SDG、SSCI (x1.6) ☐企業、SDG、SSCI (x1.8)

以陳彥霖教授之論文為例:

續下頁

查詢W4方式-SSCI (方法二)

Step1:依ppt第21.22頁方式查詢論文，帶入論文資料畫面後，點選期刊名稱，視窗右邊即顯示出來源出版物詳情預覽欄位，點選【瀏覽完整的來源出版物詳情】

Step2:點選【SCIE】，直接帶出Wos查詢畫面

Step3:確定有SSCI後，即可勾選對應欄位，並請**檢附查詢畫面當作佐證資料**

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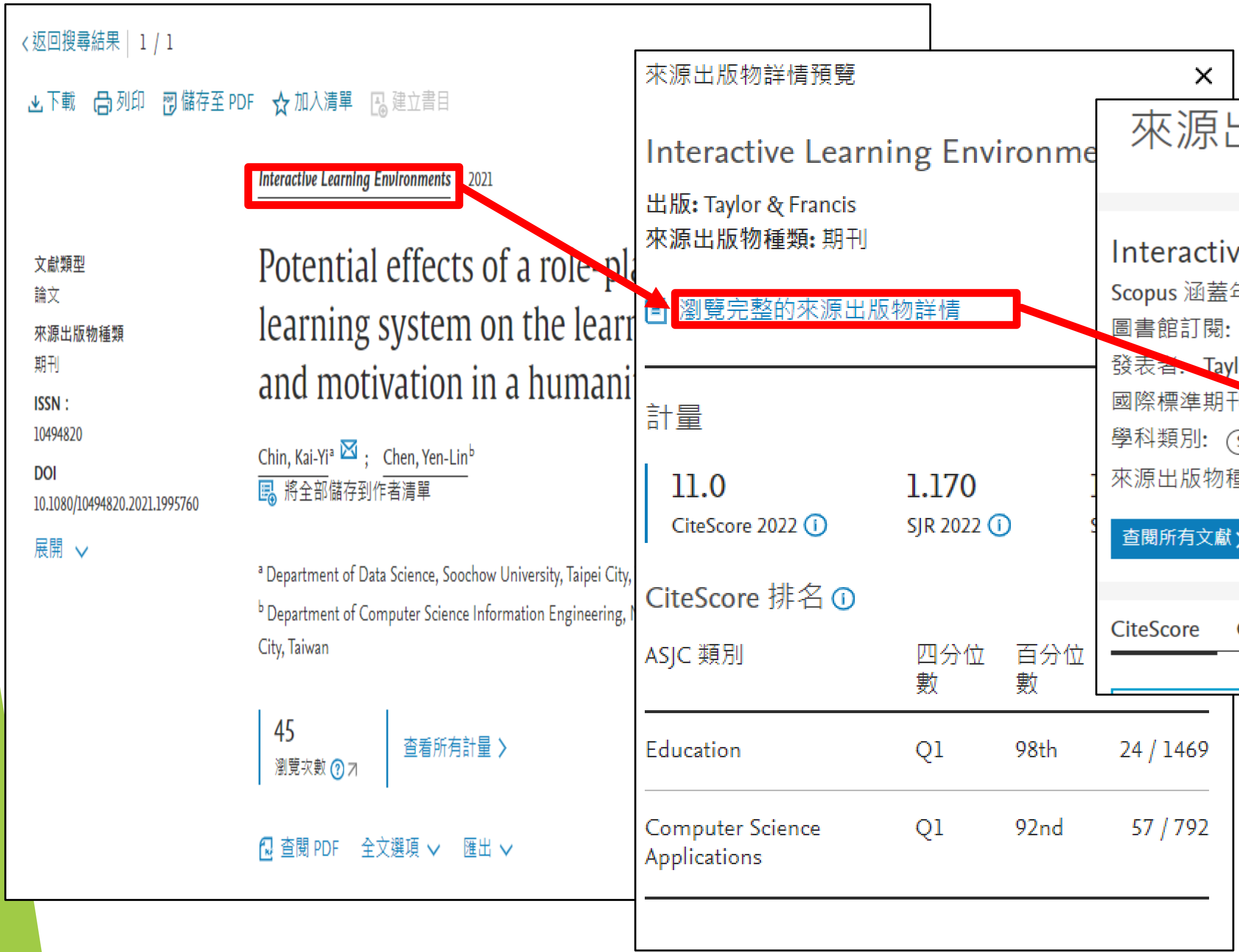

(SSCI)

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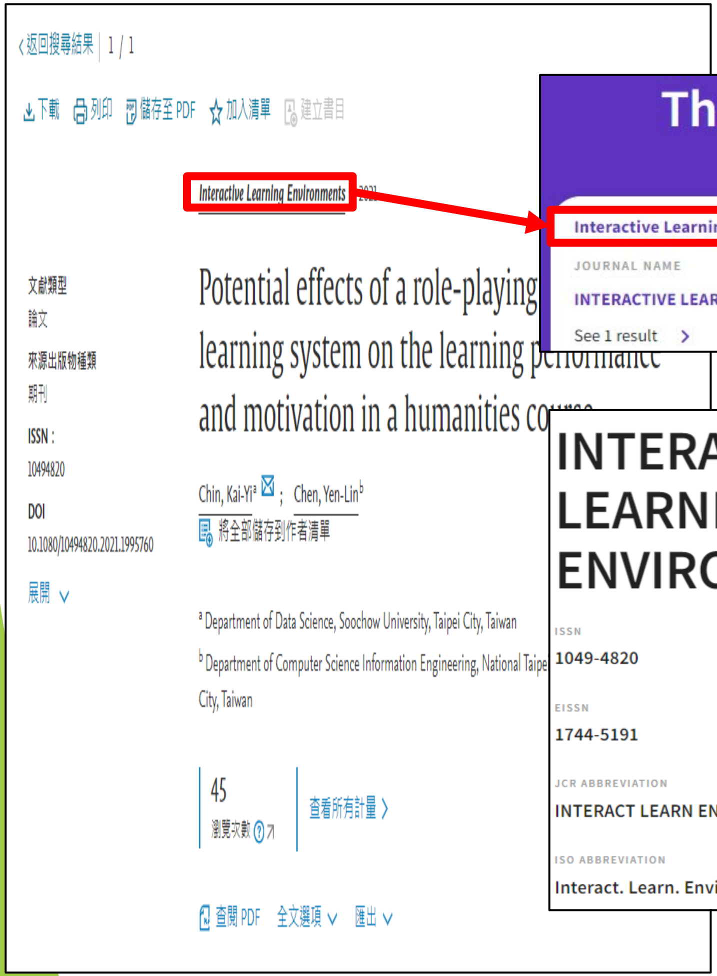
查詢W4方式-SSCI (方法三)

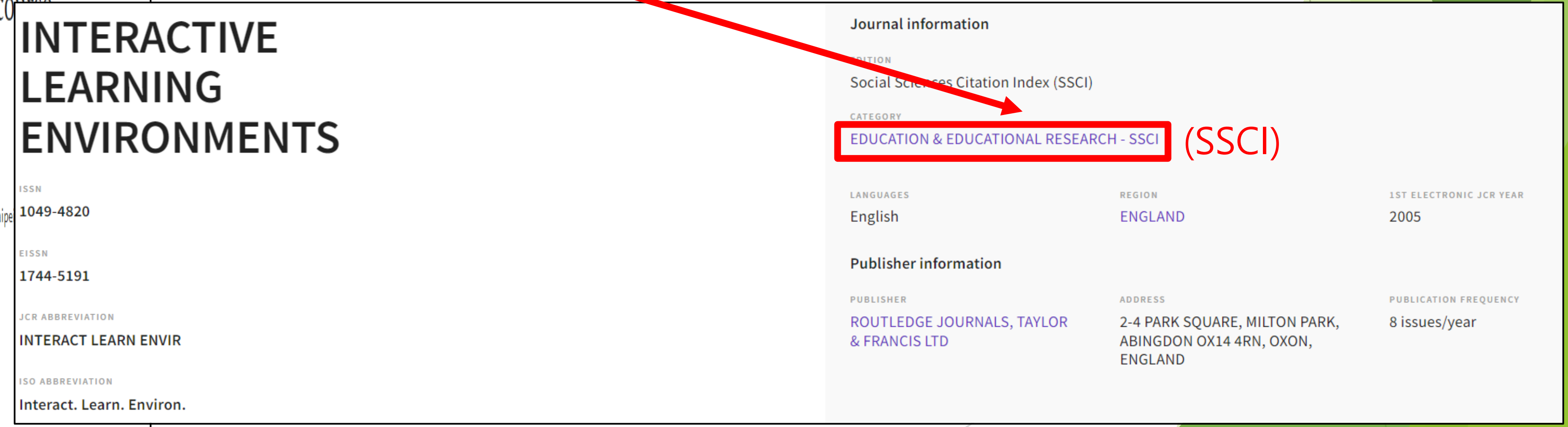
Step1:依ppt第21.22頁方式查詢論文，帶入論文資料畫面後，複製期刊名稱

Step2:至Wos將期刊名稱貼上後，點選【搜尋】，直接帶出查詢畫面

Step3:確定有SSCI後，即可勾選對應欄位，並請**檢附查詢畫面當作佐證資料**

以陳彥霖教授之論文為例:





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查詢**W4**方式

注意事項:

1. 企業的定義:**crop、Ltd、醫院**，或Scival上認列之企業。
2. 需檢附論文第一頁為佐證資料，勾選SDG或SSCI者，請檢附查詢畫面為佐證資料。

(四) 額外加權(W4)：若該篇文章與下列合著之加權相對應權重如下所示，有多項加權者請選擇相對應之選項。

額外加權	無	企業	SDG	SSCI
權重4(W4)	1	1.1	1.1	1.5

註一：符合多項加權時，請依表格填寫。

額外加權 (W4)
☐無(x1) ☐企業 (x1.1) ☐SDG (x1.1) ☐SSCI (x1.5) ☐企業、SDG (x1.2) ☐企業、SSCI (x1.6) ☐SDG、SSCI (x1.6) ☐企業、SDG、SSCI (x1.8)

續下頁

查詢**W5**方式
依ppt第21.22頁方式下載論文檔案，作者下方之區域，可以看到國際學者
以陳生明教授之論文為例:
本篇文章與3位國際學者合著，對應法規應**x1.2**

Disposable cerium oxide/graphene nanosheets based sensor for monitoring acebutolol in environmental samples and bio-fluids

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[e] *Department of Biotechnology, School of Life Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamilnadu India*

國際合著學術機構國家數(W5)

☐無 (x1)
☐1-2個國家 (x1.1)
☐3個國家以上 (x1.2)

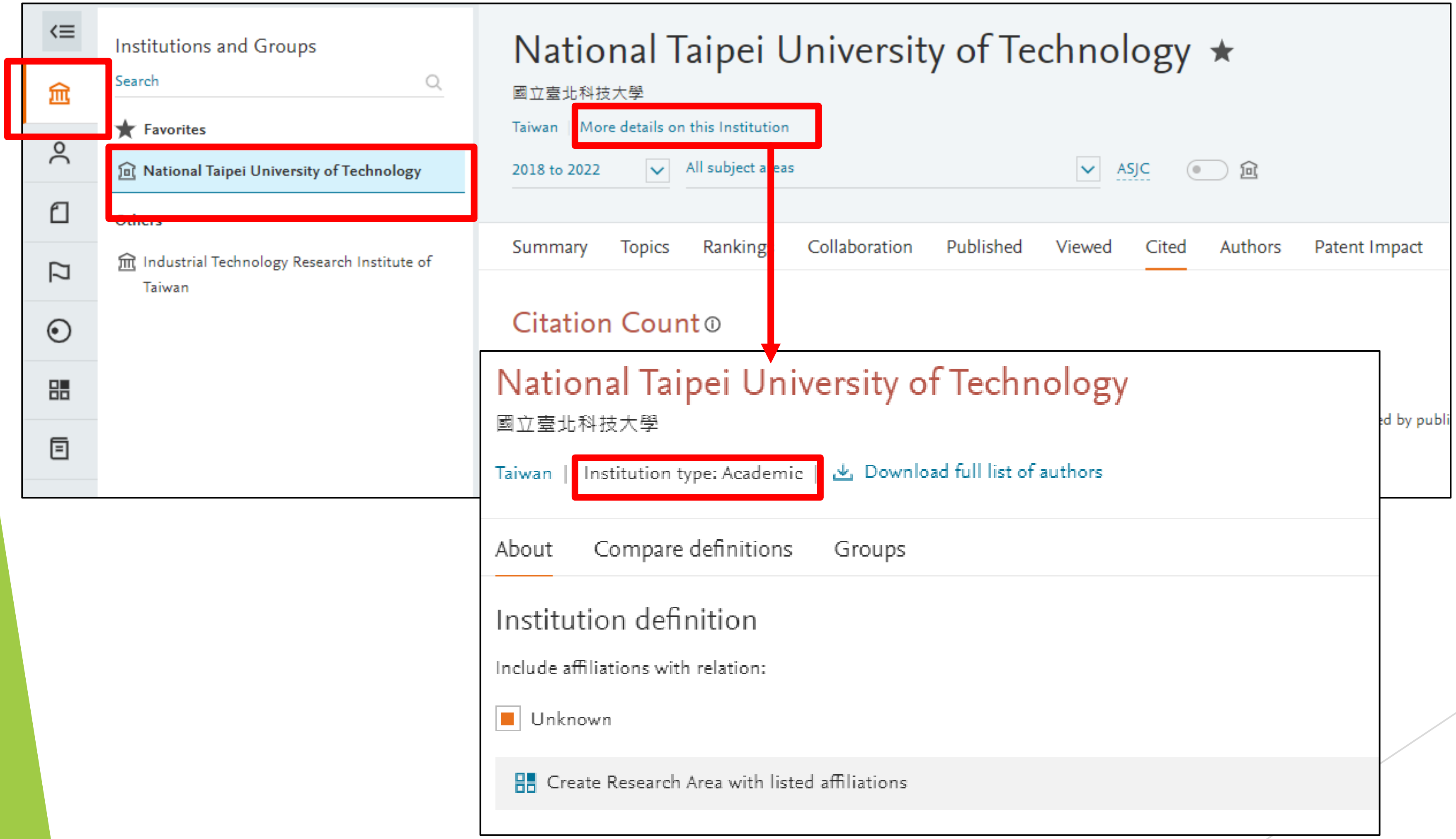
注意事項:
國際學者的定義:**除台灣以外**皆是外國，且單位須為**學術機構(學校、研究機構)**。

續下頁

查詢**W5**方式-國際學者

國際學者通常為<u>**University、Academic、College 、 Laboratory**</u>，若非前述情況，可於Scival上查詢是否屬研究機構，查詢方式同前

*私人公司之研究室<u>**不屬於**</u>研究機構



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